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KIDNEY AND URETERAL STONES*

MILES F. PORTER, A.M., M.D.

Surgeon to Hope Hospital; Professor of Surgery, Indiana University School of Medicine

FORT WAYNE, IND.

It is my purpose in the present paper to confine myself chiefly to a discussion of the diagnosis and complications of kidney and ureteral stones, and to report a case of more than usual interest. Concerning the number and size of these concretions I have nothing of interest to report except that in the case herewith reported the combined weight of the stones removed from the ureter was 1,920 grains (4 ounces), the largest single stone weighing 1,420 grains. So far as my knowledge goes this is the largest stone ever removed from the ureter, and the collection exceeds in weight any other collection removed from a single ureter.

CASE 1.—In my experience the youngest patient was a girl baby, which, when less than six months old had numerous attacks of ureteral colic and passed a teaspoonful of calculi ranging in size from a millet-seed to a wheat-grain. At four years of age this child was operated on by me for a stone in the bladder. A report of this case was published,[1] and it is pertinent to remark that this patient remained well up to April of this year.

That these concretions may be carried for long periods of time with no, or slight, subjective symptoms, is borne out by reported cases. Young[2] reports a case in which the stone was carried twenty-seven years. In my case, above referred to, a detailed report of which is appended, the stone was carried for fifty-three years. During this time the patient led a busy life as student, lawyer and jurist.

SYMPTOMS ACCOMPANYING STONE

The first symptoms complained of may call attention to the bladder as the seat of the trouble, and these symptoms may be the occasion for consulting the surgeon. Lilienthal,[3] Belfield[4] and Cabot[5] have reported cases illustrating this point.

CASE 2.—One of my patients, a woman, was brought to me because of intense bladder pain and tenesmus with incontinence and stinking urine. The patient was so seriously sick and the suffering was so intense that it was thought best to do an immediate cystotomy and allow the patient to recuperate somewhat before attacking the kidney. The cystotomy relieved the pain and the acuter symptoms of sepsis, the woman gained in strength and two weeks later was nephrectomized, a kidney containing many stones and abscesses being removed.

The coexistence of kidney and bladder stones is so frequent that it should be the rule of surgeons always to examine the bladder in cases of kidney and ureteral stone, and the kidney and ureter in cases of bladder stone.

CASE 3.—Mr. T. came to me complaining of intense and constant bladder pain. An examination revealed a stone in the bladder, which was removed. No *x*-ray of the kidney was taken, as no kidney symptoms were complained of. He left the hospital improved, but did not get well, and was forced to return to the hospital four and a half months later for the removal of an abscessed kidney with stones, which should have been recognized and remedied when the bladder work was done.

Beck[6] says that since he has been using the *x*-ray in his kidney work he has found stones in the kidney in every case of bladder-stone.

As our knowledge of the subject grows the rôle of infection as an etiologic or a complicating factor in urinary lithiasis becomes more and more prominent. This fact has an important bearing on both the diagnosis and the treatment.

McGuire[7] and Schlagintweit have reported cases of appendicitis simulating ureteral stone and causing ureteritis. Bevan[8] in 1,500 appendix operations found four cases in which the cause of the attacks was kidney or ureteral stones. In the case of fibrinous calculus reported by Gage and Beal[9] ureteritis was present, and it is highly probable that infection was the prime etiologic factor in many if not all cases of this kind that have been reported.

The frequency with which bacteria of different kinds are found forming the nuclei of urinary calculi is so well known that mere mention of the fact is sufficient at this time.

Robinson[10] and others have reported cases of nephritis with hemorrhage simulating kidney-stone. In the case of Gage and Beal above referred to, there were infarcts in the kidney and these authors ascribe the formation of the calculi to the hematuria. One such case has come under my notice.

CASE 4.—The patient was a male who was known to have a chronic interstitial nephritis, but who was referred to me because of severe pain simulating kidney colic, with partial suppression of urine. He was found to have a tender, enlarged right kidney. The *x*-ray showed no stone. Nephrotomy revealed a hemorrhagic kidney with blood-clots in the pelvis and ureter. The patient was not relieved by the operation and died two days later. Post-mortem examination confirmed the diagnosis. It is perhaps worthy of remark that in this case a diagnosis of appendicitis had been made by another surgeon and an appendectomy recommended, but refused.

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* Read in the Section on Surgery of the American Medical Association, at the Sixty-first Annual Session, at St. Louis, June, 1910.

1. Ann. Surg., December, 1901, xxxiv, 819.
2. Ann. Surg., xxxvii, 679.
3. Ann. Surg., xxiii, 257.
4. New York Med. Rec., May 14, 1887.
5. Disorders of the Bladder, p. 99.
6. Ann. Surg., xlii, 869.
7. THE JOURNAL A. M. A., Jan. 16, 1909, p. 241.
8. THE JOURNAL A. M. A., Feb. 26, 1910, p. 666.
9. Ann. Surg., lviii, 378; li, 111.
10. Robinson, E. F.: Kidney Conditions Simulating Renal Calculi, THE JOURNAL A. M. A., April 17, 1909, p. 1255.

STONE AS A CAUSE OF CANCER

That stone in the kidney or ureter may be the cause of cancer is acknowledged by most writers on the subject. My limited experience, coupled with the result of an inquiry, equally limited, among my surgical friends leads me to the conclusion that the subject is deserving of more attention than it has received. Of course the association of cancer and stone does not necessarily mean that the former was due to the latter, or, *vice versa*. But my opinion is that the association is

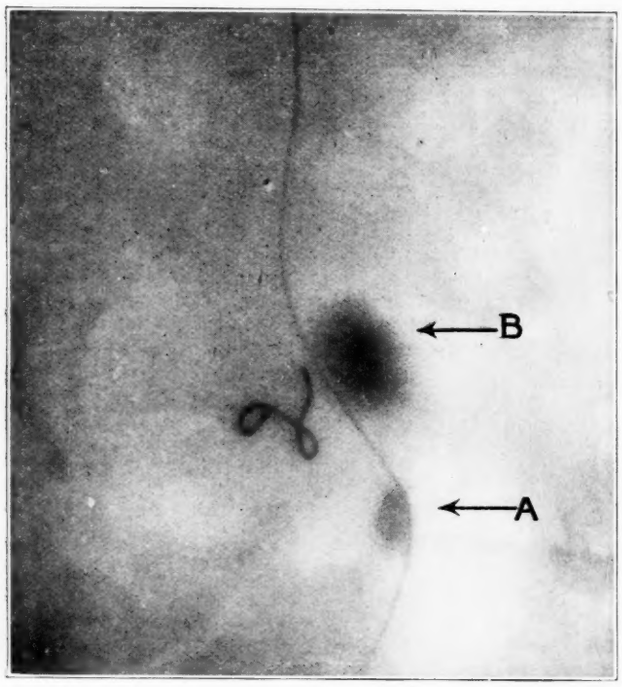

Fig. 1.—Showing one stone in (A) and one (B) just without the ureter. Catheter within the ureter.

sufficiently frequent to warrant the conclusion that stones are the cause of cancer in a sufficient percentage of cases to make the fact deserving of the attention of surgeons when dealing with nephrolithiasis.

Cancer with a large stone means that the stone was present before the cancer, and the inference is fair, I think, that it is the cause of the cancer in those cases in which the kidney cancer is primary. Two cases of kidney cancer apparently due to stones have occurred in the Mayo clinic. Both patients underwent nephrectomy; one patient was alive and well two years after the operation and the other died fifty-one days after the operation of metastasis in the liver.

Ransohoff[11] reported a case in 1899. He estimates the duration of the growth at twelve months and that of the calculus at a much longer time as it was large. The calculus was removed and the patient died forty-eight hours after the operation I have had one case of cancer due to stone in my clinic (see appended report).

Pain was a dominant symptom in three of these four cases. In the two patients (one a patient of Mayo and one of mine) who lived some time after the operation, but ultimately died of the disease, the pain persisted after the operation. In one of the Mayo cases there was no pain, but the patient came to operation largely because of loss of weight and general ill health. In the other three cases it was the pain and general ill health that brought the patients to operation.

11. Tr. Am. Surg. Assn., 1899.

It would seem that in a certain proportion of cases of cancer of the kidney with stone, the patients come to the surgeon because of the symptoms due to the cancer rather than because of those due to the stone. Given a case of nephrotomy for stone in which pain persists, the suspicion of cancer should be aroused.

When kidney stone and cancer coexist there is usually found a large stone or many smaller ones. This is equivalent to saying that the stones have existed a long time. Hence the possibility of stone causing cancer of the kidney should lend weight to the advice of Shepherd[12] and others, that in the case of large stone, nephrectomy should be the operation of choice.

STONE AND TUBERCULOSIS

G. T. Vaughn[13] voices the opinion of most surgeons when he says that tuberculosis of the kidney is primary in about 15 per cent. of cases, and is usually of hematogenous origin. That trauma is often the exciting cause of tuberculosis is universally acknowledged. These facts taken together would seem to warrant the assumption that tuberculosis of the kidneys may be caused by stone.

Fig. 2.—Two stones removed from A. Z. at first operation. Weight of large stone, 1,420 grains; small one, 20 grains.

Fig. 3.—Skiagraph showing three stones marked by arrows.

An extensive search of the literature, however, fails, to my mind, to bear out this assumption. A large number of cases in which kidney tuberculosis and stones coexisted are reported; but in a number of cases it is quite as probable that the stones were the result of the tuberculosis as that they were the exciting cause of it. More-

12. Med. News, April 23, 1887.
13. Ann. Surg., xlvii, 1025.

over, the relatively small number of cases reported in which tuberculosis and stones coexisted renders it improbable that either is often the cause of the other. Personally I have met with no case in which stone and tuberculosis of the kidney were coexistent.

X-RAY IN DIAGNOSIS OF STONE

A few years ago I was decidedly skeptical as to the value of the *x*-ray in the diagnosis of kidney and ureteral stone, but with increasing experience and knowledge, my respect for the efficiency of this agent as a diagnostic aid increased until now I am convinced that a complete *x*-ray examination is the most reliable diagnostic agent we have.

I agree with Bevan[8] that it is a more reliable method of examination than exploratory operation. Indeed, I have explored the kidney for stones and found none, but had a good *x*-ray picture taken which showed stones that were removed at a subsequent operation. The case herewith reported illustrates this point and further shows that when the *x*-ray findings are negative the symptoms are probably not the result of stone. I fully concur in Baetjer's[14] opinion, that calculi when present can practically always be found with the *x*-ray, provided the technic and apparatus are good. Phleboliths, calcareous glands, etc., lying in juxtaposition to the ureter, may be differentiated from ureteral stones by *x*-ray pictures taken at different angles, with the stylet catheter in the ureter. No matter at what angle the picture is taken the shadow of the stone in the ureter will always be

Fig. 4.—Stones removed from A. Z. at second operation; combined weight, 480 grains.

continuous with the shadow of the catheter, while the shadow of the extra-ureteral concretion will, at the proper angle, be shown at an appreciable distance from the catheter. Figure 1 is a skiagraph showing a stone in the ureter at A, and above at B, a stone lying against the ureter. The stone within the ureter lies to the inside and that without the ureter lies to the outside. Both are ureteral stones and of the same composition, but different in shape. The upper stone holds exactly the opposite relation to the catheter to that held by the lower stone, the only other difference being that the upper stone is outside the ureter, but against it, and the lower inside the ureter. The skiagraph was made on a male cadaver weighing over two hundred pounds, with the intestines full of gas and feces. Care was exercised to place the stones in the same relative position, and

Fig. 5.—Kidney from case of A. Z. showing carcinoma caused by stone.

after the picture was taken an examination was made to make sure that the position of the stones had not been altered by the placing of the plate or the compression of the diaphragm. Less pressure was made by the diaphragm in taking this picture than would be borne without noticeable discomfort by the average patient. The skiagraph was made by Dr. B. P. Weaver, my assistant, and the position of the stones verified by him and by Dr. Charles G. Beall, who also assisted me in the work.

Careful inquiry in cases of kidney and ureteral stone will reveal points of diagnostic import in many instances which patients, if left to themselves, will not mention. Most of the mistakes in diagnosis which I have made can be traced directly or indirectly to imperfect history taking, and this applies with especial force to nephrolithiasis.

REPORT OF CASE

CASE 5.—*Synopsis.*—Man, aged 69. Calculus history of 53 years. Stones aggregating in weight 1,920 grains in upper three-fourths of ureter removed at two operations. Cancer found in drain track, leading to third operation, which included removal of kidney and diseased ureter. Recovery from operation with death later from metastasis.

History.—A. Z., aged 69, married; lawyer. The patient has two sisters, both of whom are said to be scrofulous. One is thought to have cancer. Patient has never been very vigorous. When 18 years of age he had typhoid fever. When 22 years old he had a terrific attack of pain in the abdomen, which came on quickly and went off in the same way; he was out of bed the same day. This was diagnosed as an attack of ureteral colic. In 1874 he had a similar attack of pain, which lasted longer and was accompanied by fever. At this time he was sick eight or ten weeks. In 1877 he had a similar attack, but milder; in 1897, a lighter attack. In 1909 patient had a hematuria not accompanied by pain, which stopped in a few days. He had never passed any calculi. Ten or twelve years ago he passed a great deal of sand in the urine. Six weeks prior to his admission to the hospital, March 29, 1909, he commenced complaining of pain in chest, abdomen, legs and back, especially severe in left side. Hematuria developed coincidently with

14. Johns Hopkins Hosp. Rep., 1906, xiii, 479.

the pain and was still present in April, 1909. He had constant aching pain in region of left kidney, which was seldom acute, and never cutting. He had slight burning on passing urine, also pain in glans rarely, some weeks previously did have some frequency of micturition. He had no chills or fever; appetite was poor; marked constipation; temperature and pulse were normal on entering hospital.

Examination.—Fairly nourished, sandy complexion, blue eyes, rather anemic. Temporal arteries somewhat rigid. Pressure over left kidney caused pain. Some enlargement of the kidney apparent.

Blood Examination.—Hemoglobin 90 per cent., leukocytes 16,480. Differential count: polynuclear cells, 72.4 per cent.; large lymphocytes, 8.4 per cent.; small lymphocytes, 14.4 per cent; transitional cells, 3.4 per cent; eosinophiles, 1 per cent.; mast cells, 0.4 per cent.

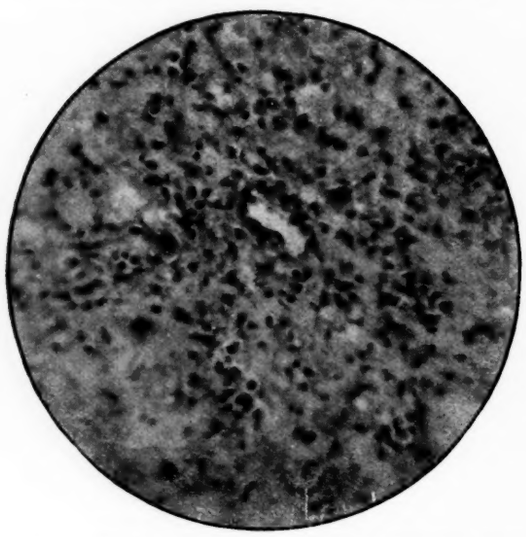

Fig. 6.—Section from kidney (Patient 5), showing interstitial nephritis; but one tubule patulous in field; 1/6 obj. (B. W. Rhamy).

Fig. 7.—Epithelioma arising from squamous layer of pelvis of kidney (Patient 5); 2/3 obj. (B. W. Rhamy).

Urine.—Analysis of the urine showed the presence of albumin, no casts, many pus and red blood cells, a few kidney cells, much mucus, many proteus bacilli, numerous streptococci; urea 8.6 gm. in twenty-four hours.

Twenty-four hours after entering hospital the patient was taken with a severe, typical attack of ureteral colic, accompanied by chills and a rise in temperature to 102.4 F. Immediately after the onset of this attack the urine became clear and an examination showed that it did not contain any red blood cells. Prior to the patient's entrance into the hospital two *x*-ray pictures were taken, both of which show a large stone apparently occupying the pelvis or upper portion of the ureter and three smaller masses lying to the outer side. A diagnosis was made of kidney and ureteral stones, with complete closure of the ureter, dating from the last attack of colic.

First Operation and Findings.—Under ether a lumbar nephrotomy was done April 1, 1909. There was found a hydronephrosis, the amount of urine being approximately six ounces. On introduction of the finger into the pelvis of the kidney this was found to be empty. The upper part of the ureter would admit the tip of my finger with the use of slight force. Immediately below this point my finger came on the upper part of the stone. With a pair of forceps the ureter was dilated and the large stone delivered with considerable difficulty. After the delivery of the large stone a probe was passed until it met with an obstruction in the pelvic portion of the ureter. This obstruction proved to be a small smooth stone about the size of a large pea (Fig. 2A). The large stone (Fig. 2B) weighed 1,420 grains and the small one 20 grains. Further search with the probe and finger failed to reveal the presence of any more stones. A ureteral catheter was passed into the bladder

Fig. 8.—Carcinomatous invasion of granulation tissue from skin wound (Patient 5); transplantation from kidney. Epithelial pearl at x; 2/3 obj. (B. W. Rhamy).

Fig. 9.—Transplantation carcinoma in skin from area x in Figure 8. Epithelial pearl; 1/8 obj. (B. W. Rhamy).

without trouble. The patient stood the operation well and left the hospital May 15, 1909. The fever subsided immediately after the operation. When the patient left the hospital he was able to be up and around and his condition seemed satisfactory, save that he was not free from pain, but complained as much as before the operation was done. On this account another *x*-ray picture was taken (Fig. 3) which showed one stone apparently occupying the upper portion of the ureter and two others lower down.

Second Operation—July 28, 1909, about four months after the first operation, the old wound was enlarged and the peritoneum and colon pushed forward to the inside. Two large and several small stones were found and removed (Fig. 4). Just prior to this second operation frequent attempts to pass a ureteral catheter through the wound failed. After the second operation and before dressing the wound the ureteral catheter passed without trouble. The combined weight of the stones removed at this operation was 480 grains. It was noted at this second operation that the granulation tissue covering the wound seemed to be superabundant and unusually firm and friable. A portion was removed for examination and a report showed that there were no evidences of malignancy.

The patient recovered from this operation but did not show the improvement looked for. Occasionally there would be a slight rise in temperature, never reaching 102 F., and the pain remained about the same. The granulation tissue, which was partially removed at this second operation, was soon reproduced in greater abundance than ever. Another *x*-ray was taken, but showed no stone. A microscopic examination of a second specimen of the granulation tissue showed it to be carcinomatous.

Third Operation.—Accordingly, on Sep. 28, 1909, six months after the first operation and two months after the second, ether was again administered and the kidney, with the upper three-fourths of the ureter, was removed. The granulation tissue about the external wound was also removed. The ureter at point of section below seemed perfectly normal; the catheter passed through it to the bladder without trouble. The upper part of the ureter seemed to have been transformed into an elongated cavity whose walls were formed of connective tissue so that in removing the kidney and attempting to follow the ureter from the pelvis downward, the connection between the pelvis and the upper end of the ureter was found to have been practically destroyed, thus making it impossible to identify the ureter at this point. As indicated above, from this point down to the brim of the pelvis the ureter was transformed into an irregular sac, which was formerly occupied by the stone, and at the last operation was very much smaller than at the preceding ones. At the lower end of this sac the ureter was readily identified and therefore dissected out and removed to a point well below the apparent disease, which would correspond with a point below the brim of the pelvis. The inner surface of the pelvis of the kidney was occupied in part by what appeared to the unaided eye to be masses of granulation tissue. These masses were rather firm and friable. Microscopic examination of these masses by Dr. Rhamy, pathologist of Hope Hospital, corroborated by Dr. Hektoen of Chicago, showed them to be carcinomatous (Fig. 5).

From this last operation the patient reacted satisfactorily and soon began to gain in strength, so that he was able to sit up and take a few steps. The improvement was of short duration, however. The pain, which was never entirely relieved, grew worse, he lost his appetite, became weaker and more anemic and died Dec. 19, 1909, a little less than three months after the last operation, and nine months after the first.

207 West Wayne Street.

ABSTRACT OF DISCUSSION

DR. HUGH H. YOUNG, Baltimore: In my case, to which Dr. Porter referred, I found a calculus in the lower end of the ureter, just above the bladder. The patient had presented symptoms for 27 years—a feeling of weight and heaviness in the pelvis and pain on defecation. In another case, a young man for 23 years had a fistula in his back. He came to me for operation with a diagnosis of necrosis of the spine. He had been operated on two or three times before, in attempts to get the fistula to heal. With the cystoscope, we found the right ureter functionating well, but in the region of the left ureter nothing was seen; no urine was coming from it and I wondered whether we did not have a case of calculus of the kidney. A radiograph was made and showed 5 stones. A nephrectomy was done, the kidney being found completely atrophied. A third case was that of a man who 10 years before had been seen by Dr. Osler, who told him he had a ureteral calculus. He got entirely over the pain and it was thought that the stone had passed. Ten years later he came to me complaining of pyuria. I found that the pus came from the left kidney. The *x*-ray showed a stone about the size and length of the index finger, situated just at the pelvic brim of the left side. It was successfully removed by operation.

The symptomatology in these cases is very varied and many cases diagnosed as stone in the kidney are not stone in the kidney at all. We all have made these diagnoses and afterward failed to find a stone. I have had 25 cases which were sent to me for operation for stone in the kidney, in which the symptoms were typical—intermittent attacks of pain, colicky in character, often requiring heavy doses of morphin and sometimes associated with hematuria. In these 25 cases I found that inflammatory infiltration around the seminal vesicles was responsible for the attacks of reflex pain in the kidney. Cases associated with hematuria showed on cystoscopic examination a markedly hyperemic median portion of the prostate and of the trigone, the congestion extending down into the posterior urethra, and generally associated with inflammation of the verumontanum, which probably accounted for the presence of blood in the urine.

Operative technic, as Dr. Porter said, is extremely varied. If there is a single stone in the pelvis of the kidney, pyelotomy should be done if possible. If more than one stone is present, pyelotomy ought probably to be avoided, and a nephrectomy done, so as to get a good exposure of all the calices in the kidney. If a marked pyonephrosis is present, nephrectomy should be done, as there would probably otherwise be a recurrence of the stone. Stone in the kidney and in the ureter can always be removed by an extraperitoneal operation. To-day no one is justified in going into the abdomen or doing the combined extraperitoneal and intraperitoneal operation. I have had 10 cases of stone in the lower end of the ureter in the male, cases that we formerly considered to be beyond reach by the extraperitoneal route, and yet no great difficulty was experienced in removing the calculi and closing the ureteral wounds. We must be careful not to injure the ureteral sphincter, because if it is cut, pyelitis is apt to follow. If the stone projects into the bladder or is largely within the bladder, it can be removed most easily either through a suprapubic incision or by the operating cystoscope. It is possible to grapple and remove easily a stone almost a centimeter in diameter by means of the operating cystoscope, and with little loss of time and with very little shock. One can usually crush such a stone through the operating cystoscope and remove it readily through the urethra.

DR. WILLIAM D. SUMPTER, Nashville, Tenn.: While it is true that we owe to the *x*-ray a great debt of gratitude for what it has done for renal surgery so far as diagnosis is concerned, there are recorded in the literature cases (and we have all had the same experience) which force us to confess that the *x*-ray, at least in soft calculi, fails to show the stone. I trust that there will come a day when the *x*-ray will reveal conditions which for years have not been diagnosed, and which will give us a greater feeling of certainty where the kidney is concerned. I have seen the best operators open the kidney, expecting to find a stone, and fail to find anything. I have been guilty of such a misdemeanor and have had to explain whether the pain present had been due to a nephralgia or to a stone. A number of years ago I found 26 stones in a kidney that had never given the patient, a woman, any trouble whatever. She had a miscarriage and the condition was discovered during an examination. About two months ago I saw a kidney that for 3 years had continually poured out pus, as was determined by the ureteral catheter. The patient

had not lost any weight, but suffered severe pains. After continued and repeated attacks of renal colic, she consented to operation. She had consulted no less than 8 surgeons, all of whom agreed in the diagnosis of stone. A radiograph was made and the roentgenologist also made a diagnosis of stone. I opened the kidney and, much to my surprise, found only some concretions, smaller than a matchhead, 4 in number. They had probably caused the pain. I removed them, closed the kidney and the woman has been well ever since.

I enjoyed hearing Dr. Young recommend the extraperitoneal route. I believe, however, that the point to be emphasized is not so much the technic of the operation as the perfection of diagnosis of stones in the kidney and ureter.

DR. MAURICE H. RICHARDSON, Boston: I agree with Dr. Porter that the Roentgen ray in the diagnosis of renal and ureteral stones is almost infallible—almost, but not quite. In my experience an existing calculus has sometimes been overlooked, or a shadow interpreted as a stone has been cast by something else. There is always the possibility of error. A recent useless nephrotomy was based on an erroneous expert interpretation of two *x*-ray shadows in the left kidney that really were caused by healed infarcts.

Stone demonstrated in the ureter by the *x*-ray, and left to itself, we can now for the first time study. I should like to hear discussed the question of removing ureteral stones long impacted and apparently causing no symptoms. In my experience ureteral stones, after the agony of their passage from the kidney to their final impaction, become and remain quiescent. I recently removed from the left kidney of a man aged 69 a stone of great size. This stone had for 35 years caused symptoms and had finally destroyed the kidney. The *x*-ray showed also a stone as large as an olive in the left ureter near the bladder. At the first consultation, in which Drs. Janeway and Fitz and I participated, operation was deemed inadvisable on account of the man's great weakness, and the secondary importance of the renal condition to the general condition. Later an acute local disturbance demanded operation at any cost. The stone was removed from the kidney, with recovery of the patient. Whether or not to remove the ureteral stone—that was the difficult question. Inasmuch as the kidney was completely destroyed, and as the impacted stone presumably caused no symptoms—it would not have been suspected, except from the *x*-ray. Attempts at its removal we deemed inadvisable. In a second case—in which the patient, a man of about 50, was himself a surgeon—we all made the diagnosis of acute appendicitis. A tender tumor could be felt at the right pelvic brim. This man is now perfectly well and able to practice, but the stone remains impacted in the same place. Several patients who have been operated on by others for appendicitis I have found to have stone impacted in the right ureter.

The subject of Dr. Porter's essay is extremely interesting to me as an abdominal surgeon. I meet with cases under the most unexpected circumstances. I usually make the diagnosis as Dr. Porter does, from the history. In most cases there is no doubt; but my experience is so large in surgical explorations under the diagnosis of stone that I have learned to look with a little doubt on the infallibility of even the most expert roentgenologists. Unless there is a significant history to back up the *x*-ray opinion, I have learned not to be surprised if exploration shows no stone either in the kidney or in the ureter. Even if the history and the *x*-ray agree, the finding of nothing but healed infarcts to account for both history and *x*-ray is a little disconcerting and forbids a too positive diagnosis.

DR. JOHN B. DEAVER, Philadelphia: A case of carcinoma of the ureter immediately below a small stone in a nurse at the German Hospital was one in which the diagnosis rested between this condition and appendicitis. There was no question in my mind as to the nature of the condition, but I hesitated to open the abdomen until the *x*-ray had revealed the stone. The kidney was diseased and I did a nephrectomy. The report came back that the ureter had already begun to show carcinoma. However, inasmuch as the patient had had a slight attack of appendicitis, I removed the appendix. I am very sure that I could not have made a diagnosis in that case without the *x*-ray. That was 4 years ago, and that woman plays an important rôle in the nursing at the hospital. She is still entirely well.

The question of diagnosis between appendicitis and ureteral stone is important. I am certain that I would have slipped up on several occasions if I had not resorted to the *x*-ray. There was a time when surgeons did not have any confidence in the *x*-ray, and I have had the experience of having an *x*-ray made and not operating, and the patient went to Dr. Richardson and he removed 5 stones. With regard to the stones in the pelvis of the ureter, it has always been my practice to do nephrotomy, making a small incision just large enough to introduce a pair of forceps and carry these into the ureter in preference to opening the pelvis. Like other surgeons, I have had trouble with stone in the lower part of the ureter. I believe that the proper procedure is the extraperitoneal operation. I make an incision through the linea semilunaris and it is a simple matter to bring up the ureter, but not to get out a stone, especially when it is near the junction of the ureter with the bladder or in the bladder wall. One of the hardest operations I have done recently was one in which I had to remove a stone lodged in the ureteral orifice. I did the suprapubic operation. The operating cystoscope appeals to me strongly.

Diagnosis between movable kidney and stone is often difficult. I have seen cases of movable kidney with a twist in the ureter exhibit the same train of symptoms—hematuria, pronounced renal colic, necessitating large hypodermics of morphin—so that I finally had to operate, but found simply a movable organ, but not a stone, which, by the way, the *x*-ray also failed to show.

DR. WILLIAM T. ELAM, St. Joseph, Mo.: A year ago a patient came to me and I made a diagnosis of stone in the kidney. The *x*-ray showed that the right kidney was a veritable stone quarry. The entire renal pelvis was dilated by the calculous mass, with numerous small nests in the kidney substance which extended up into the calices. In all there were something like 500 stones in the kidney. The *x*-ray revealed the stones in this kidney, but did not show stones in the opposite kidney. As the result of these findings, I did a nephrectomy, feeling confident that if the *x*-ray would show stones in the right kidney, it would also show them, if present, in the left kidney. It did not do so, however. Another case, very similar to this, was one in which the stones were in the right kidney, but the symptoms were reflected to the left kidney. The man complained of nephritic colic in the left kidney, and a diagnosis was made of stone in the right kidney, which was proved to be correct at the operation. The pelvis of that kidney was completely filled with stones, although the organ itself was not involved. These cases prove that one cannot depend on the *x*-ray picture when it comes to deciding whether or not to do a nephrectomy in cases in which one cannot remove the stones. In the first case reported, the stones could not have been removed even after hours of curetting; the nephrectomy proved fatal in this case.

DR. MAX BALLIN, Detroit: We seem to be agreed on the technic in cases of stone in the upper part of the ureter, but there seems to be some doubt as to the best technic for removing stones from the lower end of the ureter. Difficulties always arise in the case of stone in the neighborhood of the bladder. I have employed the following method with considerable success in two cases: The stone was imbedded in the right ureter close to the bladder. I opened the bladder suprapubically, but was unable to dislodge the stone through the bladder. Noticing how easily the ureter with the stone could be moved about in the pelvis, I had my assistant pass two fingers into the bladder wound and push the ureter with the stone toward the right groin. I then made an extraperitoneal incision along Poupart's ligament through muscles and deep fascia and pushed the peritoneum away without opening it. It is surprising how close the stone can be moved to Poupart's ligament. The stone in the ureter came right up against the fascia and was steadied by the two fingers of the assistant introduced into the bladder. The ureter was then easily opened, the stone extracted, the ureter sutured, and the wound drained. The benefit of

this method is obvious. Not everyone is able to operate through an operating cystoscope, as Dr. Young does. The extraperitoneal method alone requires a formidable incision—5 or 6 inches in length—so that one can see the entire anatomy of the parts—iliac vessels, ureter, etc.—but by my method one is able to extract the stone through a two-inch extraperitoneal incision, being assisted by the assistant's hand in a suprapubic incision through the bladder.

DR. STEPHEN A. MAHONEY, Holyoke, Mass.: A case recently came under my observation that covered some of the points brought up by Dr. Young relative to the extraperitoneal method of removing stone from the ureter, and in which I had a great deal of trouble in carrying out the method in its entirety.

The patient came under my care about 3 years ago, suffering from what appeared to be a nephritic colic. I had confidence in the *x*-ray and sent him to an expert radiographer. The plate was returned to me, showing a stone the size of a large olive down in the lower part of the left ureter. I operated and easily removed the stone. About 2 months after that the man had a severe attack of colic and the next day 2 small stones were evacuated from the bladder. A year ago he again came under my observation, this time for a mere discomfort in the back. He went to the radiographer and had both his kidneys examined. The left kidney was found to be practically normal, but in the right kidney, much to our surprise, was a stone occupying the entire pelvis. The entire tracts on both sides were *x*-rayed. We removed the stone from the right kidney. That was in June, 1909. In April, 1910, he had another attack of nephritic colic on the right side. A radiograph was again taken and a stone the size of an almond discovered down in the lower part of the right ureter. The first stone had been removed from the left ureter. Comparing the 2 skiagrams, the one from the first operation 3 years ago and the last skiagram made before the final operation, it appeared that, owing to the fact that the latter stone was so much nearer the brim of the pelvis than the former, we would have an easy time removing it. At operation we discovered the ureter easily enough, but in running the finger upward and downward we failed to discover any stone, but having sufficient confidence in the *x*-ray I opened the ureter, inserted a large-sized probe, passed it downward and upward along the course of the ureter, but still failed to discover the stone. Then I had the assistant pass a sound into the bladder to see whether we could meet the sound in the ureter from below, but failed. Still thinking that there must be some cause for the shadow in the skiagram, I did a laparotomy and, thinking that possibly the shadow might have been caused by a concretion in the appendix, we examined the appendix and found it practically normal. I ran the finger down behind the bladder in the cul-de-sac and palpated a small movable lump, which could easily be brought upward along the ureter, and therefore was easily delivered in the incision. I had used all the methods I could think of to discover that stone by the extraperitoneal method, but had failed entirely in doing so. When I got the stone out it was about the size of an almond. I could easily see on the stone lines of demarcation where it had projected into the bladder. The stone was half in half out of the bladder, and I would have failed entirely to discover it, had I not opened the abdomen.

DR. A. D. BEVAN, Chicago: In a considerable experience, covering about 70 stone operations, I have formed, as the result of rather sad experiences at times, some convictions in regard to the technic of the operation itself. I believe that whenever possible pyelotomy is preferable to a nephrotomy. In three cases, I have been compelled to remove the kidney for hemorrhage after a nephrolithotomy. In nephrolithotomy the great danger is subsequent hemorrhage, and this is almost entirely avoided if the operation of pyelotomy is done, and that should be done whenever it is possible. Of course, when it is not possible, on account of multiple stones or of the position of stones in the calices, a nephrolithotomy is indicated. When this is done, however, the incision in the kidney should be made as small as possible.

I have not tried the silver wire division recommended by the Hopkins school, but the division, so far as the knife is concerned, should be a small one, a division of the connective tissue by blunt artery forceps, stretching the kidney and removing the stone in that way. Of course, when the kidney is extensively involved and it is evident that it will remain an organ of little use to the individual, and when the other kidney is sound, it is better to do a primary nephrectomy and clean up the case at one sitting. When the stone is in the upper end of the ureter, the case can be handled with the same incision and technic as in pyelotomy. If the stone is located in the central portion of the ureter, it is better to do a muscle-splitting operation, such as is done in appendectomy, with the exception that the peritoneum is not divided, but is lifted up and the ureter sought for. If possible, the catheter should be put into the ureter immediately before the operation, because it would serve as a guide of much value. Then with blunt hooks the ureter can be lifted well up into the wound, incised, the stone removed, the incision closed, the ureter dropped back, and the catheter removed. In the lowest part of the ureter in 2 cases I have resorted to an interesting as well as an unusual technic, and that is attacking the ureter through a perineal incision, very much like the old left lateral lithotomy operation. The incision is carried down to the prostate, but not into it. Then by blunt dissection first with one finger, then with two fingers, the incision is carried around the prostate to the base of the bladder, and the stone found. This operation is, of course, limited to cases in which the stone is in the lower part of the ureter. The stone having been located, a pair of closed, sharp-pointed scissors is carried down to the ureter by a blind dissection, and the ureter is then divided, the stone being removed in this way. The procedure is applicable only to cases of stones of fair size located in the far lower end of the ureter.

DR. MILES F. PORTER, Fort Wayne, Ind.: How many pictures did Elam take in the case in which both kidneys contained stones and in which the radiograph showed stones in only one kidney?

DR. ELAM: Two exposures were made of each kidney.

DR. PORTER: This demonstrates again that we often find fault with instruments of precision when the fault lies with the individual who uses them. Separate radiographs should be made of each kidney, in order to study the organs thoroughly. I do not believe that a satisfactory picture of both kidneys can be taken at one time, but when a number of plates are made of each kidney separately we may expect that one at least will show the stones, if present. I do not believe in the infallibility of anything human, but I do believe that the *x*-ray is the best single diagnostic element in this work that I know anything about.

THE CLINICAL USE OF STROPHANTHUS*

ROBERT A. HATCHER, M.D.
AND
HAROLD C. BAILEY, M.D.
NEW YORK

The clinical use of digitalis has proved one of the greatest problems of medicine and, despite the advances made in our knowledge of the pharmacology of this group, the problem has been advanced only, not solved, and there are few practitioners who can invariably distinguish the toxic action of digitalis from the symptoms of cardiac disease.

The difficulties in the way of the therapeutic use of the digitalis bodies depend on several factors. In the first place, we have no definite knowledge of the rate of

* From the Laboratory of Pharmacology Cornell University Medical College.

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absorption of these bodies from the alimentary tract, and this knowledge is the first requisite for correct dosage by the mouth. In the next place, we know little or nothing of the rate of excretion and destruction in the body, and these facts are also of prime importance. Furthermore, except for the well-known vagus stimulation, we do not know whether they act directly on the cardiac muscle or indirectly through some nervous mechanism. Finally, the symptoms of their toxic action resemble closely those which they are intended to relieve and, without unremitting care and watchfulness, the toxic action of the drug may be superadded to the effects of the cardiac disease without the fact being recognized.

We believe that the different members of the digitalis group exert the same direct action on the heart, when once they are introduced into the circulation, and that the discussion of the choice of the member resolves itself, primarily, into a consideration of the relative rates of absorption, excretion and destruction, and, secondarily, into that of the relative intensity of the direct cardiac action on the one hand and of the indirect and side actions on the other hand. A comprehensive discussion of these facts would here be impossible, even if we had the necessary data, and we shall limit ourselves to a consideration of a few phases of the subject.

I. COMPARATIVE ACTIVITY OF THE VARIOUS DIGITALIS BODIES

Two years ago we called attention to the utter confusion existing in regard to the doses of strophanthin and strophanthus commonly advised, the largest daily dose given being several hundreds of times larger than the smallest single dose. This fact alone suffices to show how limited is our knowledge of the best method of employing these substances and the necessity of any accurate method of determining their relative activity, as a prerequisite to reliable clinical studies of their effects. The same thing is true to a certain extent of digitalis.

We are convinced by the results of a large number of experiments that the relative activity of these agents on the human heart can be determined with a far greater degree of precision by means of the intravenous injection into mammals than by any other means hitherto suggested. Even such closely related bodies as strophanthin and crystalline ouabain (strophanthin being methyl ouabain) show different ratios of activity by subcutaneous and intravenous injections into the cat, because the question of absorption is involved when they are injected subcutaneously, and these two bodies show differences in their rates of absorption from subcutaneous tissues. The differences are far greater when digitoxin is compared with strophanthin.

The average therapeutic dose of crystalline ouabain, or crystalline strophanthin, so called, by intravenous injection is about 0.5 mg., or five "cat units,"[1] the equivalent of 1.5 mg. of digitoxin or 4 c.c. of a good tincture of digitalis. It is obvious, therefore, that the dose of strophanthin used is much too high, or that of the other digitalis bodies is too low, for it must be remembered that the dose by the vein is far less than that by the mouth.

1. The "cat unit" is that amount of crystalline ouabain (0.1 mg.) which, when injected slowly and continuously into the vein, causes death within ninety minutes. When the term is used with reference to any other member of the digitalis group, the minimal lethal dose of that body per kilo of weight is meant, or the equivalent of 0.1 mg. ouabain; but many of these bodies do not kill the animal so promptly, unless an amount in excess of the minimal lethal dose is used.

II. ABSORPTION OF THE DIGITALIS BODIES FROM THE ALIMENTARY TRACT

If all of the digitalis bodies were absorbed from the alimentary tract at the same rate, or each one uniformly, it would be a comparatively simple matter to determine the correct dose of each of these, but, unfortunately, they show great differences, and the text-books on pharmacology give little information on this subject.

We have shown that the absorption of strophanthin from the alimentary tract of the cat and dog is extremely variable, and we now wish to present evidence that man shows an equal variability in absorption.

The following report shows that large doses of strophanthus may be given by the mouth without causing perceptible effects:

A woman, weighing 50 kg., suffering from mitral stenosis and moderate loss of compensation, received 360 minims of tincture of strophanthus by the mouth in nine days. This is the equivalent of 668 units, or 13 times the calculated lethal dose for this patient, if it had been given by the vein. The pulse-rate was 96, and the blood-pressure 100 before the administration of the strophanthus, and the rate was 97, the pressure 105, after the administration of this truly colossal amount.

The following cases illustrate the *apparent* effect of moderate doses of strophanthus on the pulse-rate, and the fact that rest in bed may account for the result in reality:

A patient, in the ninth month of pregnancy, had a cardiac lesion with a fair degree of compensation. She received 90 minims of the tincture of strophanthus, the equivalent of 167 units, by the mouth in three days, after which the pulse was found to be slower by 22 beats per minute.

Another woman in the same condition with regard to pregnancy, cardiac lesion and compensation, was placed in bed and given a placebo for three days. Her pulse was slowed by 21 beats per minute.

Four other women, also in the ninth month of pregnancy, were placed in bed, two being given strophanthus by the mouth, and the other two, placebos. At the end of three days, the pulse-rate of those who received strophanthus was slower by 8 and 12 beats respectively; the rate of those who received the placebos was slower by 16 and 18 beats respectively.

Three women in the ninth month of pregnancy received 334 units of strophanthus each by the mouth without perceptible effect on the force or frequency of the uterine contractions.

The following case is cited to show the absence of any effect following the administration of large doses of strophanthus by the mouth in a case suitable for digitalis therapy:

A patient suffering with myocarditis and a rapid and irregular heart, received the equivalent of 700 units of strophanthus by the mouth in the course of ten days. This is equal to ten times the calculated lethal dose for this patient by the vein. The pulse-rate, which had been 124, was then 102, the slowing being due probably to rest in bed. The patient was then allowed to get out of bed and, after a few days, tracings taken at intervals of two hours showed the pulse to be rapid and irregular. Half a milligram of crystalline ouabain, or 5 units, was administered intramuscularly and, within two hours, the pulse-rate was slowed by 30 beats per minute.

That the oral administration of comparatively small doses of strophanthus may give rise to toxic symptoms is shown by the following case:

A man aged 36 years, suffering from myocardial and valvular lesions, with marked dilatation, was given 70 minims of tincture of strophanthus in two days. This is the equivalent of 130 units, or about three-fourths of the calculated fatal

vein dose per day. The patient had persistent nausea and vomiting and the characteristic symptoms of the toxic action on the heart, the pulse being slow and irregular, despite the fact that the administration of strophanthus was stopped when the first symptom of the toxic action was perceived. After remaining in a critical condition for two days, the patient began to improve slowly and then passed from our control.

We wish to reiterate the statement that the clinical use of strophanthus by the mouth is irrational in the present state of knowledge of the subject. The experiments, still in progress, seem to show that the absorption of digitalis is also variable, but less so than that of strophanthus.

This variability in the absorption and dosage of strophanthus explains why many clinicians have praised the drug enthusiastically, prompt absorption having occurred in their cases, while others, having failed to secure absorption, have condemned it as useless.

III. EXCRETION AND CUMULATIVE EFFECTS OF THE DIGITALIS BODIES

The term "cumulation" is used loosely by many, but Dorland defines "cumulative" as "increasing suddenly in intensity after slow additions." The accumulation of strophanthus in the alimentary canal with continued administration may certainly lead to sudden absorption, but there is also a true summation of effects of that already absorbed, so that a smaller dose is required to cause death than would be necessary in the normal animal.

Whether this cumulative effect is due to a retention of a part of the drug in the heart or to an increased susceptibility resulting from the previous dose we cannot say at present, but it is suggestive that strophanthus shows cumulative effects to a much less degree than digitalis and we know that strophanthin is excreted rapidly by the rat. Our numerous experiments with the dog also show that nearly all of a sublethal dose is excreted or destroyed in twenty-four hours, and the following unpublished results illustrate the relative cumulative effects of strophanthin and digitalis:

Cumulation equal to one-eighth of the dose administered was observed twenty-four hours after giving 80 per cent. of the fatal dose of ouabain to a cat, but cumulation accounted for 50 per cent. of the dose administered four days after injecting 60 per cent. of the fatal dose of digitalis. Since both of the drugs were injected intravenously the question of absorption is not involved. These results are in accord with abundant clinical experience, but we believe that this is the most accurate estimation of cumulative effects which has been made.

The study of cumulation of the different digitalis bodies is in progress in our laboratory, the following method being used: A definite percentage of the fatal dose is injected intravenously and, after the desired interval of time, the amount required to cause death is determined by means of slow intravenous injection.

IV. SYNERGISTIC ACTIONS OF THE DIGITALIS BODIES

It is generally stated that strophanthus acts more promptly than digitalis (when it acts at all); hence strophanthus is sometimes given to induce the action promptly, after which digitalis is administered to maintain the action thus begun.

All of the digitalis bodies which we have examined, including digitoxin, digitalinum verum, digitalein, digitalis leaf, strophanthus and ouabain, act almost instantaneously on the cat's heart after the intravenous injection. The effect of ouabain has been observed within two minutes, and digitoxin, the most insoluble member of the group, may cause death within a few minutes. Just as a chemical reaction goes on more slowly toward the end, so the full action of digitoxin is delayed somewhat after the minimal lethal dose. One cat died four days after receiving digitoxin, but when the minimal lethal dose is exceeded moderately the animal may die in a few minutes.

If an animal is given about half of the fatal dose of digitoxin by the vein, and after about half an hour is given half of the lethal dose of ouabain, death follows promptly, the full action of both drugs being elicited. It is true that even with ouabain the absolutely minimal lethal dose is not immediately fatal, but the amount required to kill at once is very slightly more than this minimal lethal dose, the difference being negligible in the case of ouabain, strophanthin and, probably, with digitalein; it is greater with digitalis, and still greater with digitoxin, but, even here, it is not extreme.

It follows that since strophanthin and ouabain are capable of replacing the different digitalis bodies these must be considered as synergists. Caffein is also synergistic to the digitalis bodies, but to what extent we have not determined, though the synergism is such that it should be borne in mind when digitalis is given to those who use large amounts of tea and coffee. But caffein has been said to be antagonistic to the digitalis action.

V. SUMMARY

The choice of the member of the digitalis group which is to be used in a given case, whether it shall be digitalis itself in the form of the tincture or the infusion, or one of the active principles, such as digitalein, digitalinum verum or digitoxin, or whether it shall be strophanthus, strophanthin or ouabain, must be considered mainly as a question of administration, and not with the view to securing any essentially different action, until we know more of the differences following equivalent doses.

The oral administration must continue in favor because of the greater convenience of this method, but it cannot be considered so accurate as the intravenous or the intramuscular injection, and in acute cases, in which it is imperative that the action of digitalis be secured as quickly as possible, the intravenous or intramuscular administration is preferable, because these alone afford any degree of certainty as to the rate of absorption.

At the present time we have two pure digitalis principles available, crystalline ouabain and crystalline digitoxin. The ouabain may be used in sterile solution, but the digitoxin is insoluble in water. We come, therefore, to the logical conclusion that crystalline ouabain deserves the preference in urgent cases, and that it should be administered intravenously or intramuscularly.

Fortunately, however, we have a method of comparing the activity of the various digitalis bodies on the mammalian heart, so we can determine the equivalent dose of any of the preparations, and it will be a source of surprise to many to learn that both the tincture and the infusion of digitalis represent the leaf fully, and we must abandon the idea that the action of one is different from that of the other, aside from the minute effect of the water in the infusion.

Furthermore, another of our long-cherished beliefs is probably incorrect. The results of our numerous experiments make it difficult for us to believe that therapeutic

doses of any one of the digitalis bodies exert any appreciable direct effect on the gastro-intestinal mucous membrane. Small doses of nearly all of these bodies have been seen to cause emesis and diarrhea in a large number of experiments after the subcutaneous injection, sometimes within two minutes, whereas these gastro-intestinal symptoms are always delayed after the oral administration, and are seen only rarely in such cases, unless the dose has been as large as that which would be fatal by intravenous injection.

Another statement, which has been accepted widely, must be modified. It is said that digitoxin is a powerful vasoconstrictor, affecting even the coronary circulation, whereas strophanthin is said to have very little of this vasoconstrictor action. That this is true when isolated vessels are perfused with these principles none will deny, but we have no satisfactory evidence that marked vasoconstriction follows the use of therapeutic doses of digitoxin, and it is incredible that a heart could be capable of greater energy in the face of a markedly diminished blood-supply, when the previously greater supply had been barely able to sustain the heart's action.

But, as previously stated, we must begin the clinical investigation of the various digitalis bodies along somewhat different lines. With improved methods of determining equivalent doses of the different bodies we must compare the effects of equivalent amounts of the different bodies on different structures. We must be more guarded in drawing conclusions about the effects seen after the oral administration of these bodies, more especially with regard to strophanthus and ouabain.

Any of the pure principles or Galenical preparations of digitalis may be used after standardization, but we would warn the clinician against the use of those preparations which have not been standardized, and also against the intramuscular or intravenous use of ouabain or tincture of strophanthus except in appropriate doses. These preparations are extremely active when given in this way—much more so than digitalis—whereas they are usually much less active when given by the mouth, owing to the fact that they are usually absorbed to a much less extent, but that they may be absorbed suddenly with disastrous effect is shown by the case which we have already cited.

We regret that we must close our paper with a warning that may seem like a note of pessimism. We believe that the brilliant results which are occasionally reported with the digitalis bodies can be obtained only at the risk of endangering the life of the patient, and that even the full therapeutic action of the digitalis bodies cannot be elicited safely unless the practitioner is willing to watch the patient with extreme care.

With such limitations we believe that digitalis therapy is destined to become as exact as any department of medical treatment, but this will necessitate the recognition of those conditions which, by their very nature, are hopeless and in which digitalis will do harm.

CONCLUSIONS

The intravenous injection of crystalline ouabain affords the most exact dosage possible in digitalis therapy, and the most rapid effect.

It is quite possible that any Galenical preparation of digitalis or strophanthus will be found available for intravenous or intramuscular injection, but the activity should be determined in terms of crystalline ouabain on the mammalian heart.

The cardiac action of any digitalis body is elicited promptly after the intravenous injection.

The oral administration of the digitalis bodies will continue to be preferred for the general treatment of cardiac disease, and in such cases the tincture or infusion of digitalis deserves the preference, because they are more readily absorbed than the preparations of strophanthus.

We are in urgent need of more exact clinical studies of all of the digitalis bodies, particularly with regard to their relative effects on the centers and on the vessels, and we are in equally urgent need of further pharmacologic investigations of the rate of absorption and excretion of these several bodies, with an elucidation of the phenomenon of cumulation.

We wish to express our obligations to Dr. J. G. Brody for his assistance in carrying out many of the experiments, the results of which are used in this paper.

414 East Twenty-Sixth Street—122 East Thirty-Fourth Street.

ABSTRACT OF DISCUSSION

DR. JOSEPH L. MILLER, Chicago: Can ouabain be given intramuscularly without setting up a great deal of irritation? The strophanthin I have used sets up such an intense irritation when given intramuscularly that if by chance one fails to get it into a vessel it is objectionable.

DR. NATHAN ROSEWATER, Cleveland, O.: Several years ago, fat-free tincture of digitalis was introduced on the plea that it did away with the irritating effect due to fatty substances which the ordinary U. S. P. tincture retained. Now, according to Dr. Hatcher's valuable paper, we get the same physiologic effect, whether the tincture contains the fat or not; the question is: Do we have any different effect through the irritation produced by the resinous or fatty substance? I presume Dr. Hatcher retained the resinous substances in the tincture of strophanthus, which is an alcoholic preparation; whereas, of course, by giving the ouabain his solution might have been aqueous, and that may account for the difference in local irritation. In preparations of ergot, I am quite sure the less alcoholic the menstruum the less irritating these preparations are when used locally. When I was chemist to the New York Hospital, in 1878, I made many preparations for hypodermic use for the hospital, and found that by using a weak menstruum, having not more than 20 to 25 per cent. of alcohol, I succeeded in making an extract of ergot which would not produce any local irritation, and I afterward kept manufacturing a preparation of that kind and we had practically uniform results, physicians everywhere reporting positive clinical results, and that it did not produce the local irritation that we are accustomed to get when we use a preparation of from 40 to 60 per cent. alcohol. Dr. Squibb, according to his formula, I believe, in those days also added acetic acid. I should like to ask, therefore, whether preparations with the higher strength alcohol contained irritants that make a difference.

DR. ROBERT A. HATCHER, New York: We have not done anything with fat-free digitalis. We have experimented a little with the fat-free strophanthus. Strophanthus contains about 30 per cent. of a fixed oil. We have given enormous doses of the oil to cats without irritating the stomach. It contains only 0.1 per cent. of strophanthin. Ouabain is the most irritating substance I have ever used, not excepting veratrin. Dr. Bailey made a large number of injections in the Bellevue Hospital and he will answer Dr. Miller's question.

R. W. Wilcox of New York asserted that the fat-free tincture of strophanthus made by Parke, Davis & Co. did not irritate the stomach, but that made by Sharp & Dohme, which contained the oil, was irritating.

DR. HAROLD C. BAILEY, New York: I started using the strophanthin intravenously and I had the same trouble that

Dr. Miller mentioned. When a drop of the solution escapes from the needle in removing it from the vein, there is often considerable resulting irritation and inflammation, and when this occurs the pain is so great that the patient invariably refuses to have any more of the drug. Using it intramuscularly in the buttock by the deep injection of a 1 to 6,000 solution, it is practically painless. I find that it is well to massage the area for at least 10 or 15 minutes, and children or young women who would be apt to complain of pain have felt no pain from injections given in that manner. I have given injections into the deltoid, into the pectoral muscles and into the calf of the leg, and with each injection in these areas considerable irritation occurred, but in the deep tissue of the buttock, with a long needle, I have had absolutely no trouble. The average daily dose is one-half a milligram. This dose in some cases may be exceeded, and as much as one milligram may be given.

DR. R. A. HATCHER, New York: I wish to say one word of caution. A daily dose of a milligram may be safe if physicians will use it as Dr. Bailey did. Dr. Bailey spent the night at the patient's bedside, carefully noting the effect. Fraenkel reports disastrous results from amorphous strophanthin, which is less toxic. Dr. Bailey has used this substance with extraordinary care.

DR. LAWRENCE LITCHFIELD, Pittsburg, Pa.: During the past year, I attended Krause's second medical clinic at the Charité in Berlin, and saw three patients treated intravenously with 1 milligram doses of strophanthin (Thoms), and in no case was the dose repeated. In each case the results were brilliant. They were cases of broken compensation, with dyspnea, cyanosis, general dropsy, and oliguria, and no pulse at the wrist. Great care was taken not to give strophanthin to patients to whom digitalis had been given within several days.

DR. JOSEPH L. MILLER, Chicago: Would sterilization destroy the activity of the preparation?

DR. R. A. HATCHER, New York: I have a grave disinclination to answer the question of Dr. Miller. It almost seems that everything one deduces from his experiments is upset later. We have noticed in a large proportion of those solutions which have been boiled, that there occurred an extremely minute deposit in tubular or crystal forms, and these have been so exceedingly minute that we have not determined what they are. Some of these solutions which have been boiled gave exactly the same standard of strength some months later, but some appeared to be weaker, and we thought it possible that they had been decomposed into strophanthidin on standing, but the question is in a very unsatisfactory state and we have not investigated it. We have only a small quantity of ouabain. I have heard of a number of physicians having used crystalline strophanthin, and on writing to them have found it was not crystalline strophanthin but the amorphous product of Merck which they used. Ouabain will stand boiling without immediate change.

THE WORK OF THE COUNCIL ON PHARMACY AND CHEMISTRY

DAVID L. EDSALL, M.D.
PHILADELPHIA

I do not need to offer reasons for the existence of the Council on Pharmacy and Chemistry of the American Medical Association. We all of us know the deplorable state of things that led to its establishment. When lay journals could show that in centers of learning approximately one-half of the prescriptions filled were for proprietary remedies; when it was likewise evident that in nearly all instances these proprietary remedies were supervised as to their actual composition, their activity or potency, and all other important facts, by no one who was disinterested, and that we were dependent on the manufacturer or agent for all knowledge regarding them; and when it had already been shown of many of those that had been examined that a part or all the statements made regarding them were more or less completely false, it was quite clear that we could not maintain the honor of the profession or fulfil our duty to the public unless a complete revolution were carried out, and authoritative information obtained regarding all preparations intended for the use of the profession, and unless all those that did not conform to certain just and honorable demands of the profession were definitely discarded. I have felt that, even though I am a member of the Council, I could speak in general commendation of it, because comparatively little beyond the routine falls on me. For the same reason I may be permitted to express a warm and special appreciation of some of the more elaborate work of other members and of a considerable group of investigators who are not members of the Council.

I venture to state that few fully realize even now the magnitude of the undertaking in which this body of men has been engaged. It was self-evident that it was an extremely distasteful undertaking to the enormous combined proprietary interests that had, most of them, previously increased unchecked because the profession did not know and could not in any practicable way learn the real value or even the real composition of the vast majority of these proprietary substances. It looked in the beginning like a drawn battle between the power that comes from many millions on the one side and the force that is given by a righteous cause and the support of the American Medical Association on the other. All signs of open battle disappeared, however, as soon as it became clear, as it very rapidly did, that the movement was warmly supported—and indeed demanded—by all the better element of the medical profession. All the combined opposition to the Council has been made by devious ways and not in the open, for it has been even more apparent to the manufacturers than to the medical profession that it would be suicidal to take an open stand for clearly selfish reasons against those things that the Association loyally supports from altruistic motives. Individual manfacturers have made open complaint against decisions of the Council in occasional instances, but the evidence in all these controversies, as indeed in everything that the Council does, has been thrown open to the profession, for one of the cardinal principles in this work has been that no secret information would be accepted and that everything must be open to inspection by the members of the medical profession so that no charge of unfairness or favoritism could be supported. It is a very gratifying fact that in no instance has the action of the Council encountered anything but approval from the vast majority of the profession in any of these controversies. A handful of the profession have at times taken exception to the decisions, sometimes because they belonged to the class of people that always fight for the under dog even though he be at times a quarrelsome mongrel; sometimes from far less altruistic motives, such as financial interest in the preparation or some interest in a medical journal that was advertising the preparation. But the most stimulating fact in connection with the work is the ever-increasing encouragement and approval that has been accorded it by the members of the profession. The Council realized that it could not succeed, and indeed had no right to exist, without that approval, and for this reason it proceeded very cautiously in the beginning in formulating its rules until it could determine in how far they met favor. It was soon shown that the first rules, far

from being too severe, were not rigid enough, for the only sharp criticism that has ever been received from disinterested members of the profession was to the effect that we were too lax in certain ways and especially in the admission of preparations that were clearly designed more or less for the use of the self-drugging laity or in admitting catch-penny pharmaceutic mixtures which seemed reasonably honest and harmless, but which had no originality or other scientific merit to warrant their use. As soon as it was apparent that such alteration was widely demanded, the Council altered its rules so that it could exclude preparations of unscientific composition and those objectionably named, and could in other ways meet what was demanded. This required the elimination of some preparations that had already been accepted; others will drop out at the expiration of due and proper notice given them, unless meanwhile they are modified so as to conform to the rules; and a goodly number of preparations that would earlier have been accepted have also been excluded. This involved a large additional amount of work in regard to the questionable preparations that had already been accepted, for all these were, in justice to their manufacturers, necessarily acted on over again individually by the whole Council and not merely automatically dropped.

In the beginning the Council devoted itself to the consideration of proprietary drug articles only. Another way in which the work has grown to an enormous extent is that it has gone far beyond this class of substances. It was readily apparent that what was really needed was an investigation of all substances, proprietary or other, that are at all widely used medicinally or that have even any reasonable appearance of medicinal value and are not contained in the U. S. P., so that the physician might have at his service an authoritative statement of their composition, uses, etc., and be able to form more than a vague idea of their value. I need only mention such things as medicinal foods, the extracts of organs, the varied digitalis preparations, the organic iron preparations, serums and vaccines and mineral waters as instances of things that one either cannot get reliable knowledge of from other sources or can find discussed only in fragmentary or otherwise incomplete and unsatisfactory way. Most of these have been taken up by the Council or are now under consideration, and others will be considered in the near future. While there is still much more to come in this, it has already involved an astonishing amount of work. The preparation, for instance, of the report on serums and vaccines that will be found in New and Nonofficial Remedies was a most laborious task, for which the chairman of the committee that had it in charge deserves great credit; the report on medicinal foods and that on meat and beef-juices (the latter reprinted in the "Propaganda for Reform in Proprietary Medicines") constitute extensive chemical studies. And so it is with many of the others in this class, large amounts of time and labor having been expended on short but comprehensive articles.

The regular work of the Council week by week is by no means child's play. Every preparation that comes up is carefully considered as to the correctness of the statements regarding its composition, its action, its uses, etc., and the printed matter used for advertising it is carefully scrutinized for any infractions of the rules. It is, in short, considered carefully in connection with each of the ten rules of the Council. If objectionable features appear they are brought to the attention of the manufacturer and opportunity is given him to conform to the rules. Indeed, he is often given an almost unduly long time to do this. Any suggestions or complaints from manufacturers are discussed and acted on in a purely judicial way. With each preparation a report is first rendered by an individual member of the Council termed the referee, to whom the article is first referred. The committee into whose hands the preparation properly belongs then discusses this report and any other information in regard to the substance, and forms its conclusions regarding it. (There are committees on chemistry, pharmacy, pharmacology and therapeutics.) Finally it is discussed and subsequently voted on by the whole Council. This routine work is so extensive that every week each of the members of the Council receives, and must carefully consider almost every sentence in, a bulletin which sometimes fills forty or more sheets, and which requires constant reference to previous bulletins in forming a judgment. I mention all this in order to give an idea of the desire for thoroughness and fairness in the work, and this is only a fraction of the work. In addition to the constant studies that the Chemical Laboratory of the American Medical Association makes of articles that do not come within the scope of the Council, the latter constantly receives reports from this laboratory regarding the chemical composition of articles that are under consideration. Furthermore, when questions come up concerning a preparation or a group of preparations, such as the medicinal foods, that cannot be safely settled in other ways, members of the Council or others who have generously offered their services have frequently conducted actual extensive investigations to settle these questions and in case evidence was offered in rebuttal other investigators have gone over the matter again and at times yet again in a patient endeavor to eliminate all possibility of error. This means that a considerable group of men, consisting of some of the most distinguished of the general, physiologic, and pharmaceutic chemists, pharmacists, pharmacologists, bacteriologists and hygienists in this country have given freely of their time, labor and skill in conducting what were often long and elaborate investigations, frequently painfully dull and uninteresting to them, for no other purpose and with no other result to them than to furnish the profession with real facts about substances that are sometimes useful but only too often worthless. Besides this a large group, constituted of some of the most distinguished clinicians in the country, have acted as a board to which questions regarding the clinical use of substances under consideration could be referred, and have often given opinions and at times conducted clinical observations of the value of these substances in actual practical work.

What are the results of all this work? Previously the good, the indifferent and the bad were all in one class—we knew nothing reliable about any of them. We believed that some were above reproach—most of the others were used only too often with a subconscious feeling of ignorance as to what their composition or action really was. Severe criticism was visited on physicians by some lay journals in the earlier days of the reform movement for being willing to use means of treatment without having any real knowledge of their composition or action, when their responsibilities are so great. It was indeed an evil state of things, but the fault lay less with the individual than with the conditions under which he did his work. Circumstances practically forced him to use many of these substances, and he could not learn anything but what the manufacturer told him. The reproach fell on the profession as a body, rather

than on the individual practitioner, for putting its head into the noose and not seeing the trap until it was in it. The spectacle astonishes one now that it can be viewed from the perspective of growing distance: a learned scientific profession doing about one half of what is its chief work—treating the sick—on the strength solely of information received from advertisements and detail men. It is in entirely altering the conditions under which we work that the most evident result has been accomplished. Now the profession has at its disposal a book of 250 pages, New and Nonofficial Remedies, which is as closely packed with information as any book that can be found on any subject, and which includes every important proprietary drug except a very few that are not fully investigated; and not only the important drugs but all those that conform to the rules of the Council, whether really important or not. In addition to this the book already includes medicinal foods, serums and vaccines, many non-official but non-proprietary drugs and a variety of other medicinal substances, and gradually all substances of therapeutic importance are being included. All this is for sale by the American Medical Association for the trivial price of twenty-five cents.

So much in brief for those articles that are not evil. None of these is recommended by the Council, I would especially remark. They are simply found to be not in conflict with the rules of the Council so far as we can determine. Now what about those substances that are not accepted? Their absence from New and Nonofficial Remedies is sufficient to show that they are not acceptable when judged by the rules that have been established with the approval of, and in large part as a consequence of, the direct demand of the members of the Association. When they have been found to be actually frauds or in case there has been controversy over an unfavorable decision, and often when other reasons made a printed record of the matter desirable in order to deal fairly with the profession and the manufacturers, the evidence has been first given in THE JOURNAL of the American Medical Association and then has been made permanently available in the "Reports of the Council on Pharmacy and Chemistry," in the "Reports of the Chemical Laboratory of the American Medical Association," or in the "Propaganda for Reform in Proprietary Medicines." All these are obtainable for a few cents each. Thus for a little over one dollar one may now arm oneself with a great store of information that covers most of the things that he needs to know in regard to these matters.

It is very striking to find how valuable these publications are. I have the same experience as others in finding that I use them daily in determining points that I could not otherwise settle. For instance, within a few hours of writing this, I happened to be asked by three men who are in other professions, the nature and usefulness of three proprietary articles. One of these is in New and Nonofficial Remedies and is apparently reliable; one had been rejected by the Council for very strong reasons fully given in its printed reports, and one, a gross and dangerous fraud, was fully described in the "Propaganda for Reform." With this evidence at hand I at once satisfied my questioners, while otherwise I should have been able to offer only vague information, even though I have been obliged to acquire some special knowledge of these things, for there is such a mass of them on the market that one cannot keep track of them all, even if he has once met them.

Many articles are simply not mentioned in any of these books. That means either that they are useless or unscientific or harmful, or that they are more or less fraudulent or simply that their makers are exploiting them by methods that are generally recognized now as unacceptable. In occasional instances they are rejected solely because they will not give up a name that covers up a potent and dangerous ingredient or one that is likely in other ways to lead to dangerous self-drugging on the part of the laity, or because they persist in evading or distorting the truth about the nature of the article in some minor way, or grossly exaggerate its power for good, or because in some other relatively minor way they refuse to abide by a definite rule of the Council.

Misunderstandings between the Council and the profession have sometimes arisen in regard to individual cases of rejected articles. Most commonly the Council has been asked why it does not publish a list of all articles rejected and let it be clearly evident that they are unacceptable, instead of publishing only the list of those that are accepted. This, however, would be impossible, as it would constitute a black list, which would be illegal; and besides being impossible, it is unnecessary, for what is needed is the list of those that do conform to the rules. The others are legion and we do not need to have them labeled as such, any more than we need to label the whole population of the earth as our friends or not our friends. Those that are not acceptable we may allow to go their way with the assurance that they will rapidly fall into the class of ordinary patent medicines that cater solely to a confiding laity or that they will soon vanish if they make a pretense of catering to medical men but do not do it.

Again, the Council is asked why it accepts anything, even though all right in itself, from firms that have once deliberately tried by direct or indirect means to deal unfairly or dishonestly with the profession; that is, the Council is asked to make its rules to cover the general conduct of the people with whom it deals as well as their individual articles. This would be very desirable, it is true. It is undoubtedly very trying and at times seems degrading to have relations with people when they have once been shown to be willing to adopt falsehood or dishonorable subterfuges in order to accomplish their ends. Such practices would in ordinary life rapidly undermine the confidence of the people in a business house with which they dealt; but the medical profession is trained, I think, into a large tolerance of human frailties, and this sometimes goes much too far. Such action as this the profession has not yet shown itself ready to follow. Were such a rule made now and enforced, even with great moderation, New and Nonofficial Remedies would be a very thin volume, while if it were enforced strictly the Council's labors would be almost done; for at present it is the custom of nearly all manufacturers to present any important article and especially any new articles that need the support and interest of the best men in the profession, to the Council in conformity with its rules, and then under this virtuous cloak to offer anything else they wish in any way they wish to the riffraff that is a part of our profession as well as of any other, and even to offer what are essentially ordinary patent medicines to the public. We often see a firm that has articles in New and Nonofficial Remedies using most outrageously unethical methods in exploiting other preparations. In other words, ethics has no real place in the business policy of any except a very few firms. It is all a question of dollars and cents. When the time comes that a majority of members of the profession are willing to restrict themselves entirely to the preparations made by firms that adopt only strictly honorable methods, even though this be, as it will be, at much inconvenience to themselves at

first, the lines can be drawn in accordance with this, but the Council cannot take such action until the profession has indicated that it will take the consequences and follow the Council's decisions in its practice even up to this point, as so many physicians have already done and as so many more are constantly doing in regard to individual preparations.

Discussion has arisen also with a few members of the profession, through the fact that some article or articles that they have used with satisfaction have been refused admittance by the Council for what seemed to be rather minor reasons when all other requirements have been complied with. Some physicians who have not commented on such decisions have perhaps likewise thought that the Council was unduly rigid in such rulings. A little discussion of these cases has been sufficient to make clear the point of view and to remove the criticism. To begin with, the rules of the Council are known, and the burden of any infraction of them falls on the manufacturers. They can avoid it if they will. If they insist in refusing to abide by the rules—and it is always for some commercial reasons that any such insistence occurs—the Council can do nothing but act against them. If the rules were not adhered to, we should soon be in a state of hopeless confusion, and a storm of accusations of unfair and partisan decisions. Realizing the exigencies of trade, the Council attempts to be as mild as possible in regard to matters that are open to judgment, and especially in regard to names of articles, statements regarding their therapeutic value, and similar questions. But the Council cannot leave the decision of such things to the manufacturers, and hence, sometimes, preparations that are otherwise unobjectionable are refused because of the unwillingness of the manufacturers to abide by rulings that have been proved to be necessary—perhaps less necessary in some cases than in others, but still essential in order to avoid constant friction and frequent unfairness. In no case has an indispensable article, one that could not be replaced by some other accepted article, been refused for this reason, for the manufacturer would readily see to it that the article was made to conform to the rules if it were really a substance important to the better members of the profession. It is therefore very easy to let the manufacturer go his own way and use the other article instead.

I should not stop speaking of results accomplished through this work without mentioning two other gratifying things: One is the almost complete disappearance in all except perhaps some isolated regions of a certain highly curious but objectionable species of the genus homo—the lecturing type of detail man. We are now very little burdened in our office hours and in our hours of rest by ignorant and erroneous dissertations on any subject in medicine that bore on the samples that we were being presented with. We all had, I am sure, together with a sense of annoyance at such continuous visitations, some sympathy with these men, knowing well that they fully realized how unwelcome they and their lectures usually were. Since I have learned how often in their later days they were asked whether their preparations had been accepted by the Council, and were requested to depart if they had not been, I have a somewhat guilty sense of having contributed to the disappearance of an interesting race of men. The other point that I would mention is the real reason for the passing of the detail man, and the chief reason that the Council feels a stimulus, not only to continue its work, but to extend it. A few years ago, statements of interested parties were very commonly accepted by the profession at pretty nearly their face value. Since then they have so often been openly shown to be biased, or wholly erroneous, or false, that we have had overwhelming evidence of the spread of a healthy skepticism in the profession, and such appreciation of the fact that an interested person cannot usually, even if he will, give fair and judicial information, that the Council looks forward to a time near at hand when it can proceed to put all these matters squarely on a scientific footing, and can advance to a point where it can reduce subserviency to the methods of any manufacturer, to commercial expediency, or to trade conditions in any way, down to the lowest point humanly practicable. In the future, I think it will become the duty of the Council to advise the profession, after careful investigation, in regard to the quality and reliability of all remedies, and I hope that it will not be very long before the Council, or some other authorized body, will publish an actual book on drugs and other medicinal substances which shall contain only reliable information, and be prepared in a strictly critical spirit, so that not only in regard to proprietary substances, but in regard to other substances, the physician may be able to secure in one book all the information which is essential to him concerning his means of treatment.

Much has been said about the use of the Pharmacopeia as the basis of teaching pharmacal therapy. This appears to be entirely impossible at present. In the first place the Pharmacopeia alone does not contain a certain number of drugs that are of widely recognized value, but of newer development. Of much more importance is the fact that the Pharmacopeia contains so much at present that is absolutely non-essential that any attempt to teach what is in it would lead to still worse conditions than now exist. Although much is commonly demanded of students at present, very few humane teachers require their students to learn something about each of the individual things in the Pharmacopeia. And, even so, the too frequent lack of critical sense among practitioners in regard to pharmacal therapy may be largely attributed to the excessive demands made on the student in this branch. In the elementary stages of the acquirement of knowledge, if time and energy are too largely used in remembering manifold facts, the pressure is too great to permit of their being reflectively and thoughtfully received and they come to be received, more and more, in a mechanical way; and, finally, dogmatic statements which require little or no reasoning for their appreciation become more acceptable than those that require thoughtful consideration, because dogmatic statements can be grasped in less time, and there is need for hurry if a great deal of ground must be covered.

There is but one subject in medicine in which it is customary to require that the student and young practitioner should know something of whatever is good as well as whatever is bad, the unimportant and the important, the old and established as well as that which is new and of doubtful value. That subject is therapeutics. It is the difference in the teaching of the two specialties, I believe, that makes the average young practitioner more sound in his diagnosis than in his treatment, and it is this, I am sure, that constitutes one of the strongest reasons for his ready acceptance of

statements that are based, at best, on mere casual impressions, when considering new methods of treatment. He has formed the habit of accepting dogmatic opinions in the domain of therapeutics, while in other domains he has formed the habit of critical consideration of statements before accepting them.

It is therefore most desirable that there should be a standard work, established by the profession itself, wisely controlled by the profession, guided only by a desire for thoroughness and constant progress, but limited solely to those things that have real importance, and excluding all things that are obsolete or useless for other reasons, whether they are pharmacopeial articles or not.

1432 Pine Street.

ACUTE NEPHRITIS FOLLOWING ACUTE TONSILLITIS *

HANAU W. LOEB, A.M., M.M.

Professor of Diseases of the Nose, Throat and Ear, St. Louis University

ST. LOUIS

An experience with acute nephritis, following tonsillitis, during the winter of 1908-9, has brought two important facts to mind:

1. Acute nephritis is a frequent sequel of tonsillitis.
2. This is overlooked in practice by the great majority of practitioners.

Pediatricians are perhaps more familiar with the associations of nephritis and tonsillitis than are general practitioners and laryngologists, but what I have observed during the past year has convinced me that this association is too little appreciated by any class of practitioners. On this account, it has seemed timely to bring the relation of these two conditions to the notice of laryngologists, not so much to add anything new as to present the known facts, and to draw inferences from them that are justifiable.

The following cases are the first in which I have ever recognized the association of nephritis with tonsillitis:

CASE 1.—I. L., daughter of a physician, aged 13, had always been well and robust. She had an attack of measles several years before, but otherwise had no exanthematous disease. On several occasions she had an urticaria, and at one time an attack which resembled acute appendicitis, which, however, completely disappeared without recurrence. Dr. Engman, who had seen her in the attacks of urticaria, thought that this was probably a similar condition in the cecum. Patient suffered about once a year with a very mild attack of tonsillitis, but the tonsils themselves did not appear, up to this time, to be sufficiently large to require removal.

During the latter part of November, 1908, she was taken with a mild attack of lacunar tonsillitis, with temperature running up to 101 F. The tonsillitis continued for several days without any increase in fever. On account of the slight elevation of temperature, great care was taken to eliminate diphtheria, cultures proving negative. There was no evidence whatever of scarlatina. The attack was prolonged for something like two weeks, with intervals of amelioration and of increase. After this time she was permitted to return to school. Ten days later there was a recurrence of the tonsillitis, though evidently somewhat mild. However, it was deemed sufficient to justify her remaining home from school. Two weeks later, on December 17, she complained of headache at night. During the following day she was more or less indisposed, and on the night of the 18th she again complained of headache, this time more severe. Aspirin was given to her, but with very little effect. On the morning of the 19th, her urine was examined with the following result: Specific gravity, 1,009, dirty red in color, with a ring of albumin, abundance of red corpuscles, hyalin, granular and pus casts. That afternoon, without warning except for a headache, patient had a uremic convulsion, which was succeeded thirty minutes later by another. Hot packs, enteroclysis, administration of large doses of water and pilocarpin, caused rapid improvement, and the quantity of urine for the first twenty-four hours after the convulsions amounted to 54 ounces.

On the afternoon of the 22d, she was again attacked with convulsions, more severe than the previous ones, and, an hour later, another convulsion appeared, less severe, but followed by coma. Reaction was much less rapid from this attack; in fact, the patient's life was despaired of, but the use of the electric light pack, combined with jalap powder and elaterium and magnesium sulphate, was finally successful, although she was very much weakened. The patient, after this, received the electric light pack, pilocarpin and liquid diet, and was retained between blankets without clothing for a period of eleven weeks. The urinary conditions improved very gradually. Specific gravity about 1,010 for a period of two weeks, blood gradually disappearing from the urine, as did also the casts and albumin. On March 26, 1909, albumin had entirely disappeared, with the exception of an occasional hyalin cast; the condition of the urine was practically normal. The patient left then for California. On arrival, it was found that the albumin had increased somewhat, doubtless owing to the long and trying trip. Patient spent six months in California and returned to the city with conditions entirely normal. Patient has increased in weight, and physically has been as well, or even better, than at any time in her life before. The tonsils were removed after she had been in bed for eleven weeks.

During the course of the disease she was under the care of Drs. J. S. Myer, J. R. Clemens, W. P. Elmer, G. C. Crandall, W. E. Sauer, Dudley Fulton and others.

CASE 2.—Mrs. M. G. S., aged 28, wife of a physician, married for three years, had one child 2 years of age; previous history unimportant.

Early in January, 1909, the patient had an acute lacunar tonsillitis of a rather severe type, differing in no particular from previous attacks. Cultures were taken and found negative as to diphtheria; streptococci present. Small superficial ulceration appeared on the palate, but this speedily disappeared. Although the attack lasted two weeks, longer than usual, it gradually subsided. About this time the patient began to complain of slight headaches, which gradually became more intense. Some puffiness having been noticed about the eyes and a general indisposition and lack of energy, a specimen of urine was examined and the following conditions were found: Specific gravity 1,005, acid in reaction, wide ring of albumin, a few pus casts, and red corpuscles.

Patient was at once sent to the Jewish Hospital with a diagnosis of acute hemorrhagic nephritis following the tonsillitis. Within the next few days the urinary conditions became gradually worse, the urine being decidedly bloody in character. Two per cent. of albumin (Esbach's test) was found, and casts of all sorts—chiefly granular. Under the usual treatment in the hospital, conditions gradually improved, with the usual varieties in the urinary findings, and after a period of sixteen weeks the urine had returned to a perfectly normal condition, all evidence of nephritic involvement entirely disappearing. One year has elapsed since the inception of the trouble, and entirely normal conditions have existed ever since.

Drs. J. S. Myer and W. P. Elmer were associated with me in the case.

CASE 3.—C. H. R., intern in hospital, consulted me on January 11 on account of obstruction in his nasal passages. On Jan. 20, 1909, a submucous resection of the septum was performed, the nose being plugged immediately after the operation. That evening the plug was removed without any considerable hemorrhage. The next day, against advice, he pursued his usual work. That evening he was taken with a hemorrhage requiring packing, which was removed the follow-

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ing morning. On the night of January 23, he was taken with severe pains in both ears, and on the morning of the 24th, paracentesis was performed on both sides. The bilateral middle-ear suppuration pursued the usual course, the discharge ceasing entirely about February 3 and 4. The patient, who was a very active man, took very little care of himself and pursued his duties in the usual way. On February 8 he discovered edema of the ankles. An examination of the urine showed a very large amount of albumin, blood, and casts. After three months of rigid treatment in the usual way, by Dr. William Engelbach, he entirely recovered from the acute hemorrhagic nephritis. It was only after the attack of nephritis came on that he told me that, at the time of the operation, he was suffering from an acute sore throat, which had been going on for a week before, and which continued for a week after the operation. He stated that he had refrained from telling me, fearing that I might postpone the operation.

While, of course, it must be admitted that an acute hemorrhagic nephritis could follow an infection subsequent to a plug in the nose for secondary hemorrhage after a submucous operation, in view of the fact that the other cases occurred about the same time, I have felt that I would be at least justified, with this explanation, in including this case among the others.

CASE 4.—J. R., intern at hospital, complained of sore throat for about three days, when first seen on March 26, 1909. He had been having, year after year, a number of attacks of acute tonsillitis. Tonsils moderately enlarged. He was put to bed, temperature being 100.4, respiration 20, pulse 100. Examination of the throat revealed lacunar tonsillitis affecting both tonsils. Culture showed absence of Klebs-Löffler bacilli and presence of staphylococci and streptococci. Under local application of argyrol and the administration of aspirin, caffein, etc., the throat trouble entirely subsided in four days. The patient was permitted to leave the bed, minimum temperature being 97.8, maximum temperature 101.6 axillary.

Two days later patient complained of dull ache across kidney region and general malaise. He was again put to bed. Urinary examination showed a moderate amount of albumin, a few red blood cells, and a few hyalin and granular casts. The patient was put on liquid diet, with plenty of water and no medication except daily laxative doses of magnesium sulphate. The temperature, pulse and respiration remained normal, and the twenty-four-hour urine 60 to 80 ounces. The patient was permitted to leave the bed in six days. Urine entirely cleared up in about three weeks time from the patient's admission to the hospital the second time. Patient was kept on a restricted diet for two months. Previous to the throat trouble, the urine conditions were normal.

COMMENT

Of these four patients, two were physicians, one the daughter of a physician, and one the wife of a physician; and, presumably, greater care was to be expected in observation than in patients not directly related to physicians. And yet there was no suspicion of the possibility of a nephritic condition until the disease was well advanced.

In each instance, diphtheria and scarlet fever were positively excluded.

In each instance, the nephritis was of the hemorrhagic non-scarlatinal type; that is, there was no pyrexia or great edema.

In each instance the tonsillar inflammation was mild in character and the course unusually slow. The nephritis was not discovered in any of the cases until the tonsillar affection had disappeared. This differs materially from the nephritis of scarlatina and diphtheria, in which the physical signs as well as the symptoms of the nephritis are concomitant with the height of the disease.

Case 1 shows how insidiously the nephritis may develop without noticeable symptoms, and how serious it may become without marked warning.

Case 4 is a good illustration of a case caught at its inception; perhaps it would have continued mild and, if the patient had not chanced to examine his urine, he might have recovered without ever knowing of the presence of an acute nephritis.

In all the cases, the nephritis would have been considered as spontaneous, or idiopathic, if the tonsil affection had not been so closely observed.

REVIEW OF LITERATURE

The literature on the subject, although exceedingly meager considering the importance and gravity of the condition, bears out my own observation, particularly as to the course of the nephritis. Less attention has been paid to the character of the tonsillitis itself, which, after all, should be studied with the utmost care. This is mainly due to the fact that the subject has been far more widely studied by internists than by laryngologists.

The tonsil itself, as an atrium for the entrance of disease, has been investigated by a number of laryngologists; notably by Goodale, Wood and Wright.

Goodale[1] established that carmin granules may enter the parenchyma of the tonsil, and Wood[2] succeeded in finding tubercle bacilli in the cervical glands after rubbing a hog's tonsil with these micro-organisms.

Following the example of Goodale, Pirera[3] made applications of coloring agents to the tonsil lacunæ and also micro-organisms in pure culture. In men, he made application of indifferent saprophytes (*B. prodigiosus*), and in narcotized dogs, pathogenic micro-organisms (*Staphylococcus aureus*). The result of the experiment was positive. He found that micro-organisms enter the tonsillar tissue more easily than coloring particles. The former are stopped under the lacunar epithelium, the latter are stopped within the follicle. The greatest possibility of invasion was found in connection with the pathogenic micro-organisms, which were scattered into the follicles as well as into the follicular connective tissue.

Jonathan Wright,[4] on the other hand, claims that the experimental work of Pirera, frequently quoted in support of the idea that bacteria readily penetrate the epithelial walls of the tonsillar crypts, to be so crude, so glaringly open to criticism of technic, that his results and conclusions are utterly worthless. He thinks, however, that there is good presumptive clinical evidence that pathogenic bacteria, which in a state of equilibrium, are harmless habitants of the tonsillar crypts, are, under certain conditions, absorbed through the tonsillar epithelium.

He finds that there is fair experimental evidence that pathogenic bacteria of foreign origin in vast numbers and unmodified by the cellular environment of the tonsillar crypts, when blown into the throat of an animal unaccustomed to them, pass through the tonsillar epithelium and produce systemic effects.

In the first instance, we must suppose some antecedent change, some nerve shock, some systemic cause,

1. Goodale: Arch. f. Laryngol. u. Rhin., I.
2. Wood, G. B.: The Significance of Tuberculous Deposits in the Tonsils, THE JOURNAL A. M. A., May 6, 1905, p. 1425.
3. Pirera: Le glandule dell'anello di Waldeyer, specielmente le tonsille pallatine, considerate come via d'entrata delle effezioni (microbiche), Arch. ital. di laringol., April, 1909.
4. Wright, Jonathan: The Difference in the Behavior of Dust from that of Bacteria in the Tonsillar Crypts. New York Med. Jour., Jan. 6, 1906.

which permits the pyogenic or other bacteria—habitual denizens of the crypt—to penetrate the epithelium.

In the next place, where there is presumably no systemic change, or shock, or other cause, we must suppose that the foreign pathogenic bacteria in numbers that do not obtain under the usual conditions, overpower the bacteriolytic and other protective influence which is sufficient to repel, under usual conditions of health, the inhabitants of the tonsillar crypt. Wright concludes, after making a number of experiments, that the carmin granules pass through the layer of viscous bacteria and then through the epithelium without carrying any of the bacteria with them.

Whether or not bacteriologic investigation shows the possibility of the tonsil being the point of entrance for disease, there is abundant clinical evidence—at least so far as nephritis is concerned.

As early as 1881, Leyden[5] called attention to the possibility of nephritis occurring after a simple angina. He stated, however, that it was analogous to the fact that diphtheritic paralysis could follow simple angina. He also described a form of acute spontaneous nephritis showing itself after exposure to cold and wet, and characterized by slight fever, hemorrhagic urine, albuminuria. Some of these cases run a slight course without edema, other patients have severe symptoms with edema, uremia, and death.

A. Thouvenet[6] reported, in 1894, the case of a woman, aged 45, who was suddenly attacked with acute lacunar tonsillitis. Ten days after the beginning of this disease, she was taken with headache, dizziness and severe dyspnea, rapid heart action, edema of the eyelids and legs, urine loaded with albumin. The albumin disappeared after four weeks' treatment, and the patient remained well. Thouvenet believes that there are many cases of acute nephritis, said to be due to exposure to cold, which really result from an attack of inflammation of the tonsils, which perhaps is overlooked.

Jessen[7] reports four cases of acute tonsillitis in which the tonsils acted as points of entrance for severe general infections, and in two of which nephritis was present.

De Mensil de Rochemont[8] states that in the clinic at Leipsic, out of 1261 cases of angina, 31 cases of nephritis were found in which the course was in the main not unfavorable. The majority of the patients went on to entire cure, while others required several months to recover, and one died.

On the other hand, Emil Mayer,[9] in a very comprehensive study of the literature, in writing on the tonsils as portals of infection, only casually mentions albuminuria as one of the conditions known to follow angina.

Even Richards[10] in his extensive review of the present status of the tonsil operations, simply mentioned nephritis with numerous other conditions caused by tonsillitis, such as aneurism, appendicitis, erysipelas, meningitis, pneumonia, paraplegia, strabismus, osteomyelitis, phlegmon, oophoritis, orchitis, and general septic infection.

Julius Ullman[11] calls attention to the fact that nephritis often follows acute tonsillitis, and states that nephritis later in life often results from angina in childhood.

John Lovett Morse[12] thinks that it is reasonable to consider tonsillitis as a cause of nephritis on account of the fact that it is due to bacterial infection, and that being complicated by cervical adenitis, peritonsillar abscess, or acute inflammation of the middle ear, it should lead to inflammation of the kidney as do other diseases due to micro-organisms. An additional reason is the fact that it is caused by streptococci, the usual cause of acute nephritis in scarlet fever. In eight months previous to his report he had seen four cases of tonsillitis resulting in acute nephritis in all of which it was possible to exclude scarlet fever as the cause.

He further states that it is evident from these cases that tonsillitis, whether of a severe or mild type, may be the cause of acute inflammation of the kidneys. It is probable that tonsillitis is more often followed by nephritis than is commonly supposed, and it is very likely that in many cases which are considered primary the infection enters through the tonsils, the local manifestations not being severe and having been forgotten. This being true, tonsillitis should not be looked on, as it usually is, as a simple disease of but little importance. The disease, which can cause acute endocarditis and acute nephritis, is certainly one worthy of consideration. The heart and urine, in tonsillitis, should therefore be examined as carefully as in rheumatism or scarlet fever, and the examination kept up for a time during the convalescence.

Herrick[13] states that tonsillitis, or an every-day sore throat, is probably in many instances the atrium for the entrance of toxic infectious agents that induce nephritis, and in all cases of obscure origin careful inquiry should be made as to recent nose or throat trouble. A comparatively insignificant angina, a mild rheumatism, a cold or supposedly trifling grip, may be the precursor of a nephritis.

By far the best characterization of the relation of tonsillitis to nephritis is made by F. Müller.[14] He considers that angina (including angina phlegmonosa) is much more often the cause of nephritis than has been formerly believed, and that we are not justified in looking on every angina followed by nephritis as scarlatina sine exanthemate.

Postanginal nephritis is frequently overlooked, as it so commonly begins insidiously with very mild albuminuria and hematuria which only a microscopic examination will reveal, and with no symptoms except a slight lassitude. Such a nephritis can be discovered early only by physicians who make it a point to examine the urine carefully after every attack of sore throat.

It must be remembered that only the severe anginas may cause nephritis but that, as in scarlatina, very mild —even ambulatory—cases of tonsillary infections may result in affections of the kidney. He calls attention to the insidious character of the condition in contradistinction to the scarlatinal nephritis, which is usually characterised by pyrexia, oliguria, and a murky brown-red urine. However, later in the anginal nephritis,

5. Leyden, E.: Ueber das erste Stadium des Morbus Brightii und die acute oder frische Nephritis, Ztschr. f. klin. Med., 1881, iii.
6. Thouvenet, A.: Tonsillar Nephritis, New York Med. Jour., May 5, 1894.
7. Jessen: Tonsil as Entrance for Severe General Infection. Deutsch. med. Wchnschr., 1898, No. 32.
8. Du Mensil de Rochemont: Ist es nothwendig Anginakranke zu isoliren? München. med. Wchnschr., March 7, 1898.
9. Mayer, Emil: The Tonsils as Portals of Infection. THE JOURNAL A. M. A., Dec. 2, 1899, p. 1381.
10. Richards: Ann. Otol., Rhinol. and Laryngol., December, 1909.
11. Ullman, Julius: Tonsils as Portals of Infection, New York Med. News, Oct. 20, 1900.
12. Morse, John Lovett: Tonsillitis as a Cause of Acute Nephritis, Arch. of Pediat., 1904.
13. Herrick: Osler's Modern Medicine, vi.
14. Müller, Fr.: Morbus Brightii, Verhandl. Deutsch. Path. Gesellsch., 1905, p. 64.

slight edema, especially of the eyelids, appears, moderate albuminuria, cylindruria and red cells may be found for weeks and months, and even after many years there may be a recurrence of hematuria and albuminuria. Müller believes that the tendency to complete restitution is small; in some cases, there may be, in time, a rise in the blood pressure, hypertrophy of the heart, and other signs of a contracted kidney. Many of the relapsing chronic hemorrhagic nephritis in all probability are due to an original post-anginal nephritis.

Adler[15] describes a form of nephritis which occurs in at least 75 per cent. of all cases of pure tonsillitis, not including, of course, scarlatina or other infectious diseases. Unless the physician makes it a point to look for this nephritis, no clinical manifestations will direct his attention toward it, as there are no symptoms. The urine, as a rule, is secreted in sufficient quantities and is not more scant or highly concentrated than we are accustomed to see in any febrile disease. Albumin appears usually within the first forty-eight hours from the onset of the tonsillitis, and is never very voluminous—in most cases but a trace. The microscope shows possibly a few red blood cells, some casts, hyalin, finely granular and epithelial, but always more or less abundant renal epithelium. We have, therefore, what is usually designated as desquamating nephritis. There is no edema, no vomiting, no headache, in fact no subjective or objective symptoms except those contained in the urine. In the overwhelming majority of cases, the nephritis disappears simultaneously with the tonsillitis or soon thereafter; disappears as unnoticed as it came. But sometimes it does not disappear and persists long after the tonsillitis is cured. Now and then, however, it does not permanently disappear, but persists indefinitely. It is true that these cases of persistence of nephritis after tonsillitis are, on the whole, not very frequent, but they are not nearly as rare as the very scanty literature on the subject would indicate.

Philip K. Brown[16] reports a case of nephritis after tonsillitis in which albumin appeared in the urine on the day on which the throat was attacked. The sediment contained hyalin, granular, epithelial and blood-casts, and many mucous cylindroids, and also many red blood cells. Sugar was found, but never before nor after. The patient progressed toward a definite acute nephritis, which was further complicated by a course of acute mania toward the end of the nephritis.

F. Kleininger[17] reports that, in three years, he had seen eighty-four cases of cryptogenetic diseases, of which there were forty-nine cases of rheumatism, sixteen of nephritis, and eight of endocarditis. Of these cases, in 83 per cent. the tonsils were the cause. He considers that the tonsils are a filtration apparatus which prevent bacteria from overwhelming the system.

H. Curschman[18] asserts that every simple acute tonsillitis, with or without abscess formation, may be the cause of an acute or subacute (generally hemorrhagic) nephritis, which often, unfortunately, becomes a chronic and cannot be cured. The nephritis occurs sometimes immediately after the beginning of the tonsillitis, but, as a rule, it is a sequel. He reports three cases of tonsillar hemorrhagic nephritis completely cured after tonsillectomy.

15. Adler: New York Med. Jour., March 31, 1906.
16. Brown, Philip K.: Remote Effects of Tonsillar Infection. THE JOURNAL A. M. A., June 15, 1907, p. 2024.
17. Kleininger, F.: Ueber die Bedeutung der Tonsillen für das Zustandekommen der sogenannten kryptogenetischen Erkrankungen, Internat. Centralb. f. Laryngol., Rhinol. u. Wissensch., 1908.
18. Curschman, H.: München. med. Wchnschr., Feb. 8, 1910.

CONCLUSIONS

1. Acute nephritis results from acute tonsillitis far more often than is generally believed.

2. The symptoms ordinarily are not manifested until some time after the inception of the disease.

3. The nephritis is of the hemorrhagic type and differs from that of scarlet fever in that pyrexia, edema, and oliguria are not marked symptoms of the disease. In addition, it follows the angina and is not concomitant as in scarlatina and diphtheria.

4. Judging from the course of the cases reported, there must be many in which a mild nephritis occurs incident to a tonsillitis, which goes on to resolution without patient or physician being conscious of its presence.

5. As each case of lacunar tonsillitis may be a potential source of acute nephritis, it is incumbent on practitioners to observe the urine, not only during the height of the disease, but for some time after as well.

6. Spontaneous or idiopathic nephritis is probably often due to a tonsillitis that has not been considered as an etiologic possibility.

7. Chronic affections of the kidney may very well owe their origin to unrecognized acute attacks of nephritis of tonsillar origin.

8. Much light may be shed on this subject by a study of the urine in a large number of cases of acute tonsillitis.

537 North Grand Avenue.

THE TREATMENT OF TYPHOID BACILLUS-CARRIERS

WITH REPORT OF A CASE TREATED BY INOCULATIONS OF TYPHOID VACCINE *

WILLARD J. STONE, B.S., M.D.
Attending Physician St. Vincent's Hospital
TOLEDO, OHIO

TYPHOID IMMUNITY

One year ago, before another Section of this Association,[1] I presented the results of a study of typhoid immunity and anti-typhoid inoculation. It was shown at that time that the factors of acquired immunity in typhoid were largely concerned with the process of phagocytosis, and those antibacterial elements which make phagocytosis possible; *i. e.*, the opsonins and stimulins. The other antibacterial elements, the bacteriolysins, bactericidins and agglutinins, while possessed of certain powers antagonistic to the infection during and immediately subsequent to the attack, were considered, according to work so far done, of lesser value in the perpetuation of such immunity.

In this disease, as in many others accompanied by leukopenia, the problem of active immunization seems to resolve itself into a study of these measures which primarily augment the number of leukocytes, with secondary augmentation of those antitropic substances which render the leukocytes capable of phagocytosis.

After recovery from typhoid, as from certain other acute infections, the immunity acquired by the body cells usually lasts during the life-time of the individual.

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

1. Stone, W. J.: Typhoid Immunity and Antityphoid Inoculation, THE JOURNAL A. M. A., Oct. 16, 1909, p. 1253.

As shown, however, in the previous study, the immunity thus induced may vary greatly, and it is not at all uncommon to find that more than one undoubted attack has occurred within six or seven years. Dreschfeld's figures based on 2,000 cases in the Hamburg General Hospital showed that only 0.7 per cent. were affected twice. It is probable, however, that the incidence of multiple infection is greater than these figures indicate.

On the other hand, it must not be forgotten that other bacteria may produce conditions which are clinically identical with typhoid, and which many times are diagnosed as typhoid. The differentiation of typhoid-like, paratyphoid, colon and paracolon infections is by no means easy under the most favorable circumstances. Some types of meningitis and *Bacillus coli* septicemia may give positive Widal reactions in dilutions usually considered diagnostic of typhoid, and when made by an observer familiar with the motility of the strain. Lumbar puncture will, it is true, in most cases, clear up the diagnostic atmosphere in cases which are suspected to be typhoid but in which there are positive Babinski and Kernig's signs; while blood cultures, in septicemia due to the *Bacillus coli communis,* will usually give sufficient evidence for differentiation. Certain strains of *Bacillus coli,* however, may not produce indol or coagulate milk, and differentiation may be possible only after prolonged cultural and animal tests.

The virulence of the infection—a factor of importance, but, unfortunately, in our present state of knowledge, difficult to ascertain—undoubtedly has much to do with the problem of immunity; since, if overwhelming in one instance, little active immunity may result, while if mildly stimulating in another with good cellular resistance, an active, long-persisting immunity may follow. This is in accord with present knowledge of all infections which produce their destructive results through growth and death of the bacterial cell within the body, *i. e.,* by so-called "endotoxins." The problem is somewhat different in such infections as diphtheria, pneumonia or tetanus, which do their damage through toxins elaborated during the life of the bacterial cell. The efficient neutralization of these toxins, in all probability a purely chemical problem, is followed by recovery but not by an efficient immunity.

TYPHOID CARRIERS

One of the most interesting problems with which we are concerned in typhoid is in connection with typhoid carriers; *i. e.,* the persistent elimination of bacilli for years after recovery, and during an interval when the individual shows increased resistive powers by methods calculated to measure his state of immunity. Such immunity, which may be designated as partial or incomplete immunity, is in all probability sufficient to protect the body cells against the damaging influence of the infection, but insufficient to exert any destructive or antagonistic power directed toward eradication of such infection. In other words, the phagocytic power may be higher than normal while the bacteriolytic and bactericidal powers may be low.[2]

In practically all reports of typhoid carriers, such individuals were not seriously inconvenienced by the presence of the infective agent which earlier, before partial immunity was established, produced manifestations of the disease. According to Park,[3] in most chronic carriers, the bacilli are eliminated with the feces, while the urine contains the bacilli in a relatively smaller number.

Connell[4] regards the bile as the medium in which the bacilli perpetuate themselves. He regards the feces as a greater source of danger during the active stage of the disease, and the urine as the great spreader of the disease during the decline and post-febrile stage. Forster believes the gall-bladder to be the site of constant reproduction of the bacilli, which are intermittently ejected into the intestines; a view also held by the Ledinghams,[5] since investigations have shown that the bacilli may disappear during convalescence, only to reappear several months later.

Typhoid carriers who become such through association with the disease, "contact carriers"—and such instances are not uncommon among nurses and orderlies—who themselves have not had typhoid to their knowledge, likewise show tolerance to the presence of the germs without inconvenience. Their tolerance is probably to be explained as due either to a natural immunity or to partial immunity from an earlier unrecognized mild typhoid infection. From this standpoint it is not illogical to assume that the measure of immunity which protects the individual during and subsequent to attack against the infection itself, is to be found largely in those antitropic substances which are concerned with an augmented power of phagocytosis; while lowered antibacterial substances, such as the bacteriolysins and bactericidins, permit the infection to persist for years in the individual without serious damage to himself, but without eradication of the bacterial elements.

The history of typhoid carriers varies greatly. In most instances they have been discovered in hitherto unexplainable endemic outbreaks among the inmates of asylums or among families who have happened to employ the same cook or obtained milk from a dairy previously under suspicion because of its possible connection with earlier endemics. A larger number of typhoid carriers, in the sense that they have been the cause of endemics, have been women who have in some way been connected with the preparation or handling of food products. Houston[6] in 1899 reported the first case of persistent typhoid bacilluria in a "contact" typhoid carrier, who for three years had shown symptoms of chronic cystitis. The largest number of recorded cases having origin from one source was reported by Lumsden and Woodward,[7] who found a typhoid carrier in a dairy responsible for fifty-four cases of the disease among the dairy customers.

The time since the original attack has varied from one to fifty-four years. Scheller,[8] who investigated an endemic on an estate in Prussia, found that during a period of fourteen years, thirty-two cases of typhoid had occurred, traceable to a woman employed in the

2. The determination of the opsonic index in patients with acute typhoid infection is difficult, since the bacilli are susceptible to the agglutinative and bacteriolytic action of the serum. In chronic typhoid infection (carriers), after one year, the agglutinative and bacteriolytic effects are, as a rule, markedly diminished, and the determination of the opsonic power of the serum is a matter of less difficulty. This matter of the time element accounts for the discrepancy in the results obtained by various workers on different patients.

3. Park, W.: Typhoid Bacilli-Carriers, THE JOURNAL A. M. A., Sept. 19, 1908, p. 981.
4. Connell, K.: Am. Jour. Med. Sc., 1909, cxxxvii, 637.
5. Ledingham, A. and J. C. G.: Brit. Med. Jour., Jan. 4, 1908.
6. Houston, T.: Brit. Med. Jour., Jan. 14, 1899.
7. Lumsden, L. L., and Woodward, W. C.: A Milk-Borne Outbreak of Typhoid Fever Traced to a Bacillus-Carrier, THE JOURNAL A. M. A., March 6, 1909, p. 749.
8. Scheller: Centralbl. f. Bakteriol., 1908, No. 5, p. 385; abstr. editorial, THE JOURNAL A. M. A., June 13, 1908, p. 1986.

dairy, whose attack had occurred seventeen years previously. Typhoid bacilli were found in her stools in almost pure culture. Out of forty people who drank of the milk of this dairy, eighteen were found to be typhoid carriers, and yet only five of the eighteen had ever had typhoid. Such individuals must be considered "contact carriers," as above mentioned.

Soper's most painstaking investigation[9] showed that in six years twenty-six cases of typhoid could be traced to a cook employed successively in households where the disease appeared. Typhoid bacilli were obtained from her stools; none were found in the urine; her blood gave positive agglutinative tests. The Ledinghams,[5] in the course of a study of the inmates of a Scotch asylum where typhoid had been endemic, found thirty typhoid carriers out of a total of ninety women examined.

Gregg[10] has reported the case of a boarding-house mistress who served as the source of infection in seven cases of typhoid fifty-two years after her own recovery. No bacilli were found in the blood or urine, but pure cultures were obtained from the feces. Jundell has described the conditions present in a family the mother of which was shown to be a typhoid carrier, over fifty years after her attack. During an interval of fifty-four years, twenty-two members of the family were attacked. This carrier was 83 years old and her feces were found to contain typhoid bacilli. Huggenberg[11] reported thirteen cases of typhoid in a family, traceable to the mother, whose attack had occurred thirty-one years previously, and whose feces contained the bacilli.

Park[3] has estimated that fully 2 or 3 per cent. of typhoid convalescents become chronic carriers, in the sense that the bacilli persist after years in stools and urine, and as such are dangerous to the community. Probably not more than one-half of such carriers actually infect others.

DIFFERENTIATION OF CHRONIC TYPHOID BACILLURIA FROM BACILLURIA DUE TO BACILLUS COLI COMMUNIS

Colon bacillus infections of the urinary bladder in women are relatively common for anatomic reasons. It has been found exceedingly difficult in my experience to differentiate some forms of bacilluria due to the *Bacillus coli* from chronic typhoid bacilluria. At the present time, I have under treatment two cases in which the cultural methods are confusing. Neither individual to his knowledge, has had typhoid fever. Both were considered from the early cultural tests as "contact" typhoid carriers; but latterly, the same strains which in the beginning did not produce gas in glucose gelatin, or produce indol, or coagulate milk, have been found to do so in slight amount, and the earlier expressed opinions are open to question.

One may differentiate these cases, I believe, in another way, i. e., by the local reaction to injections of autogenous vaccine. The colon vaccine is much more toxic than typhoid vaccine, although occasionally one may meet a relatively non-toxic colon strain. As a rule, however, an injection of 50,000,000 colon bacilli produces a local reaction equivalent in intensity to a dosage of 300,000,000 of typhoid bacilli.

9. Soper, G. A.: The Work of a Chronic Typhoid Germ Distributor, THE JOURNAL A. M. A., June 15, 1907, p. 2019.
10. Gregg, D.: Boston Med. and Surg. Jour., July 16, 1908.
11. Huggenberg, E.: Corr.-Bl. f. schweiz. Aerzte, 1908, xix, 635.

THE TYPHOID CARRIER PROBLEM

The typhoid carrier problem is a perplexing one, since in certain American cities, where for years the disease has been endemic with a consequent large number of unrecognized carriers, the installation of adequate filtration plants, while reducing the disease incidences, will not for years to come rid these municipalities of typhoid. Popular education seems to offer a partial solution of the problem. Patients convalescent from typhoid should understand that from 2 to 5 per cent. of those who have the disease harbor the bacilli in their gall-bladders, intestines and urinary tract, for periods of years, and under such conditions become a source of constant danger to others.

It will be obviously impossible to control any large percentage of typhoid convalescents by bacteriologic tests, but it will be possible for physicians to educate their patients and always to bear in mind the possible connection between the earlier attack and symptoms, sometimes slight, referable later to the gall-tract, to a slight urinary cystitis, to a recurring mild dysentery, or headaches supposed to have their origin in faulty metabolism. Segregation of individuals known to be chronic carriers may be regarded as practically impossible. Since every typhoid patient requires the constant care of at least two, usually three individuals, it can readily be surmised that a large percentage of such attendants become "contact carriers" without themselves manifesting symptoms of the disease. Park has estimated that "probably one in every five hundred adults, who have never knowingly had typhoid fever, is a typhoid bacillus carrier."

TREATMENT

So-called urinary and intestinal antiseptics such as phenyl salicylate (salol), sodium phenolsulphonate and hexamethylenamin have been found to possess little value in the treatment of chronic typhoid infection. Treatment by autogenous or stock bacterial vaccines seems to offer more chance of success. It has been shown by the extensive work of Wright and Leishman and his co-workers that the bactericidal and bacteriolytic properties of the blood serum are augmented to a considerable degree by the injection of typhoid vaccine. As shown in my previous paper on this subject, the bactericidal substances are increased four- or fivefold by inoculations of typhoid vaccine. The bacteriolytic substances are also increased so that, as a rule, the serums of inoculated subjects when diluted 1 to 10 and mixed with living typhoid bacilli, will cause either complete disappearance of the organisms or their reduction to amorphous masses.

A stock vaccine is quite as efficient as vaccine prepared from recently isolated autogenous strains.[12] On the other hand, for various reasons, it is probably better to use a vaccine prepared from the patient's organisms. Irvin and Houston[13] have reported disappearance of the infection by treatment with an autogenous vaccine in a patient who had contracted typhoid seven years previously. In the course of the seven years, six persons living in the same house as the patient, developed

12. The immunizing potency of typhoid vaccine six months old is apt to be diminished. The best results are to be obtained with vaccine not over three months old. Care must be used not to overheat the vaccine in preparation, since overheating greatly impairs its immunizing properties. The thermal death point of most strains of typhoid bacilli is 53 C. Occasionally one may meet a more resistant strain.
13. Irvin, S. T. and Houston, T.: Lancet, London, Jan. 30, 1909.

typhoid fever. After she came under treatment, urinary antiseptics were tried without avail for five weeks. She received during the following two months five injections in doses varying from 50,000,000 to 500,000,000, with disappearance of the infection.

REPORT OF VACCINE TREATMENT

Mrs. A. B. P., aged 34 years, was seen Nov. 19, 1909. She complained of more or less constant chilliness, malaise and fatigue, diffuse abdominal tenderness, with constipation and tenderness over the gall-bladder and liver, with occasional painful micturition. These symptoms followed an attack of typhoid fever of five weeks' duration, one year previously. The attack was unattended with complications. The examination revealed a moderate secondary anemia due to menorrhagia (hemoglobin 72 per cent., Dare, erythrocytes 3,140,000); temperature normal; tenderness on palpation over gall-bladder, and general abdominal tenderness and distention due to gas. The urine was slightly cloudy, contained few pus cells or epithelial elements; no albumin or sugar, but with marked indican reaction which was persistent.

The diagnosis made at this time was secondary anemia, due to menorrhagia and constipation with auto-intoxication. The patient improved under Blaud's mass with cascara. Potassium bicarbonate was prescribed for the bladder irritation. In December, 1909, the bladder irritation persisting, hexamethylenamin was prescribed (4 gm. daily) but without effect. In January, 1910, cultures taken from the urine revealed two types of organisms; both were motile, neither liquefied gelatin; but one, the preponderating type, corresponding to the typhoid group, did not produce indol, or acid in litmus gelatin, or coagulate milk, or produce gas in glucose gelatin; while the other, corresponding to the colon group, responded to these tests. The patient's blood gave a positive agglutinative reaction in one-half hour in dilution 1 to 20 with a stock typhoid culture, and agglutinated promptly in dilution 1 to 40, the organisms corresponding to the typhoid group present in the urine. The opsonic index was 2.3 while the bactericidal powers of the blood serum, using a dilution of 1 in 5, were found to be below normal. Since normal blood serum shows bactericidal power against the typhoid bacillus in a dilution of 1 in 10 it seems safe to assume lowered bactericidal properties in this particular serum. The bacteriolytic properties of the blood serum were lessened, since in dilution of 1 in 2 no effects were noticeable, other than agglutination, in two hours. Typhoid bacilli were not found in the stools. An autogenous vaccine was prepared from the typhoid organisms present in the urine. She received between February 11 and April 29 six injections in doses varying from 100,000,000 to 400,000,000. The typhoid organisms were no longer present on the plates after six injections, although since that time a few organisms, corresponding to the colon group, mentioned above, have been found. The patient is now under treatment with vaccine prepared from the colon group of organisms. Her blood on May 18, 1910, would agglutinate a stock typhoid culture in dilutions up to 1 in 100. Her subjective symptoms, such as the painful micturition and abdominal tenderness, disappeared after the third injection. The tenderness on palpation over the gall-bladder has also disappeared. The opsonic index has not been determined since the series of inoculations owing to the rapid increase in the agglutinative powers of the serum which, as mentioned above, interferes with the estimation of the index. The bactericidal powers have been increased during the inoculation, so that in dilution of 1 in 20 no colonies developed on the plates in twenty-four hours, after incubation of the serum dilution with a bouillon suspension for 15 minutes. The bacteriolytic power after the series of inoculations was increased so that in dilutions of 1 in 10 the bacilli were reduced to amorphous masses in two hours.

CONCLUSIONS

A survey of the literature citing typhoid carriers treated by bacterial inoculations, although few in number, appears to warrant the following conclusions:

1. The time element is an important factor in the reaction of susceptibility to inoculations of bacterial vaccines in typhoid carriers. Typhoid carriers, injected within a comparatively short time after their infection, will in all probability, receive more benefit from properly prepared autogenous vaccine than from any other known form of treatment.

2. "Contact carriers," who never to their knowledge have had typhoid, are more susceptible to the inoculations than carriers who have had a definite attack of this disease, and who are in all probability more immune.

3. Where the infection has persisted for years, it may be difficult to clear up the condition by bacterial inoculation. The effort should at least be made, since in the somewhat similar condition, chronic carriers of apparently non-virulent tubercle bacilli, the bacilli often disappear from the sputum during a course of inoculations of some one of the tubercle products.

4. The immunity manifested by typhoid carriers is in all probability a partial immunity in the sense that while these individuals are protected against the infection through an augmented phagocytic power held by their body cells, the antibacterial substances such as the bactericidins and lysins are lessened to a degree insufficient to exert any destructive power against the infection.

The Colton Building.

ABSTRACT OF DISCUSSION

DR. JOHN J. BUETTNER, Syracuse, N. Y.: I wish to report the case of a typhoid carrier; there was given a history of a typhoid fever thirty years before; there had been possibly a reinfection five years ago. The disease in this patient was discovered by accident. The patient had a persistent diarrhea, with blood in the stools. There was absolutely no evidence—no abdominal tenderness, no rise of temperature, absolutely nothing—to suggest the possibility of this being a case of typhoid fever. The stools were carefully examined and pure culture of the typhoid germ was discovered. The urine at this time gave a positive diazo reaction. The Widal reaction was positive. At no time did this patient show any rise of temperature whatever. In this case autogenous vaccine was used; five injections were made of from 25,000,000 to 1,000,000,000 dead bacteria. This was done between the months of December and February. Since then three examinations of the stools have been made very recently and there has been no reappearance of the typhoid bacilli in the stools.

DR. JAMES T. TERRILL, Galveston, Texas: The question of typhoid fever carriers is, of course, an important one; and of exceeding interest and importance are the diagnosis of these conditions, and the identification of these typhoid carriers who are a menace to the communities in which they live. In the course in bacteriology given at the University of Texas, we experimented in the laboratory with the students, seeing if we could not get the Widal reaction from their own blood. We found that a large percentage of the students who had had typhoid fever at some time of their lives gave either a positive Widal reaction or a partial agglutination. I should say that one out of five of the men who had had typhoid gave these reactions. The question that has interested me most is, how many men who have had typhoid fever and who give a positive Widal reaction, are really typhoid carriers. The identification of the typhoid bacilli in the stools, especially when they are few in number, is difficult It seems to me that the laboratory workers should develop some more certain and simpler method for the identification of typhoid carriers. Dr. Stone's work should be carried further, that is, testing the bactercidal (or perhaps "typhocidal" would be better and more proper term to use) property; this might give very valuable information.

I have had occasion to attempt the isolation of microscopic organisms found at the autopsy table; in a series of ten autopsies I found from none up to six different varieties; the autopsies were made less than four hours after death. In this series, there was one case in which I identified the the typhoid bacillus and the patient had at no time given any history of the disease, so far as the hospital records are concerned. I should like to say in parenthesis, however, that the histories of charity patients are extremely unreliable and not to be depended on. Here there were one, possibly two cases, out of ten autopsied at random in which the typhoid bacillus was found. I believe that the extermination of these typhoid carriers rests with the manner with which they are treated. These patients should not be allowed out of quarantine till the physician is sure that they are rid of the germs of typhoid from mouth to anus. These patients should not be turned loose to become a menace to the community, but should be handled in a scientific way until they are free from the typhoid germs.

DR. WILLARD J. STONE. Toledo, Ohio; I should like to emphasize one feature included in my paper in regard to the problem of typhoid carriers in general. Dr. William H. Park of New York some years ago gave some statistics of interest; he estimated that fully one in every 500 adults in the United States, who had never had typhoid fever, was a typhoid carrier; I confess that this was a surprise to me. At the same time I believe this statement of Dr. Park's to be correct. It should be remembered that every case of typhoid fever requires the more or less constant care of from 2 to 3 individuals during the course of the disease and the possibility of these individuals contracting the infection is very great. Many of them do not manifest symptoms of the disease but become, as mentioned in my paper, typhoid carriers by contact; *i. e.*, "contact carriers." I do not believe that we should necessarily say that because the blood serum of an individual agglutinates typhoid bacilli in low dilution, that it is significant. However if the agglutination persistently occurs in moderately high dilutions, 1 to 40, or 1 to 60, then they may have some diagnostic significance. We should be very careful about diagnosing so-called typhoid carriers without having obtained the bacilli in pure culture from the stools or from the urine.

ARTIFICIAL IMMUNIZATION IN NON-BACTERIAL DISEASES*

S. P. BEEBE, Ph.D., M.D.

Professor of Experimental Therapeutics in Cornell University Medical College.

NEW YORK

A large portion of our knowledge concerning the processes of immunity and nearly all the practical applications of this knowledge have been concerned with infectious diseases. Many of the theories, however, which have made progress possible have been elaborated on the basis of experiments with snake venoms, hemolytic reactions, and pure proteids; and this kind of laboratory experimentation has preceded, or been coordinate with our advance in knowledge concerning the infections. We have in the venom of poisonous snakes and in certain poisonous proteids of vegetable origin, such as ricin, examples of non-bacterial toxins which are quite as suitable for the purpose of immunity investigation as the bacterial toxins and the results obtained by the employment of these substances have been of great importance in the history of immunology. In the recent investigations respecting anaphylaxis, the reactions of the organism to proteids of non-bacterial origin have been studied, and the conclusions reached afford a sounder theoretical basis for a clear understanding of infections.

From a practical standpoint also, such studies have been of value, and Calmette[1] has perfected his methods of producing antivenene to such a degree that its therapeutic value is not to be doubted. To produce his serum, the immunization is begun with very small doses of venom, to which is added an equal quantity of 1 per cent. gold chlorid solution; injections are given every three or four days and continued over a period of three to sixteen months, at the end of which time the animal may be immune to one hundred times the fatal dose. Such a serum is therapeutically efficient when 2.5 c.c. of the serum will protect a rabbit weighing 2,000 gm. against 0.001 gm. of the venom. When such a serum can be given immediately after the bite is received, its protective power is very efficient; if there is delay, a much larger dose must be administered. The dose of 10 c.c. to 50 c.c. of serum is not larger than that used in many cases of tetanus.

Other animal toxins, such as those from the scorpion, from spiders, from the tarantula, heloderma, and from bees, have been used as antigens to develop immune serum, and in a few instances such serums have been used therapeutically.

All alien proteids when introduced directly into the circulation have marked toxic actions. This is particularly true of the very marked hemolytic behavior of eel-serum. Repeated injections of any foreign proteid which at first may be harmless may develop, on subsequent injections, the peculiar reactions of hypersensitization already described.

Weichardt[2] has described a peculiar toxin obtained from fatigued muscle. To obtain his toxin, originally animals were fatigued by means of a treadmill, or by strychnin poisoning, saline extracts of the muscles were prepared and the usual muscle extractives removed by dialysis. The toxin was non-dialyzable and, when injected into normal animals, it produced symptoms of fatigue. By the usual method of animal inoculation he prepared an antitoxin which alleviated the symptoms of fatigue and enabled an animal to perform more work. In a later paper he states that, by violent shaking of a proteid solution at ordinary temperatures, he obtained cleavage products having the character of his fatigue toxin, while, if the shaking was done at a higher temperature, an antitoxic substance was formed. This interesting point deserves further confirmation.

Toxic substances of vegetable origin have been used as antigens for many experiments in immunity investigation and, in some instances, notable additions to our theoretical and practical knowledge have been obtained. Ford[3] has demonstrated that immune serum may be developed against the hemolytic glucosid of *Ammanita phalloides*, and has had promising results in the practical application of immune serums developed against the toxic glucosid of poison ivy.[4]

The investigations by Dunbar and his pupils of the toxic action of pollen protein on susceptible individuals, and the development of serum against these proteins has been a matter of much theoretical interest and considerable practical value. The extreme susceptibility of an individual to the pollen protein seems to have analogy in those instances of anaphylactic death follow-

* Read at the General Meeting of the Congress of Physicians and Surgeons, Washington, D. C., May 3, 1910.

1. Calmette: Kraus und Levaditi's Handbuch der Technik und Methodik der Immunitätsforschung, Jena, 1908.
2. Weichardt: Ueber Ermüdungstoxin und deren Antitoxine, München. med. Wchnschr., 1904, Nos. 1 and 48; 1905, No. 26; 1906, Nos. 1 and 35.
3. Ford: Antitoxins for the Poisonous Mushrooms, Med. News, lxxxvii, 771.
4. Private communication.

ing injection of horse serum in patients known to be susceptible to the presence of horses.

The reactions of immunity are, however, not restricted to highly toxic proteins. As is now well known, the injection of any alien proteid stimulates the formation of antibodies, whose presence may be detected by one of several methods, such as the precipitin reaction, the hemolytic reaction, or the diversion of complement, as a basis of the Bordet-Gengou-Moreschi phenomenon. It was soon discovered that such reactions were to a high degree specific, that is, the anti-action of the serum was exhibited mainly against the specific biologic sort of proteid employed for the injections, but a slight reaction might be obtained with the proteid from closely related species. The biologic reaction has therefore enabled us to make sharp differentiations that cannot be detected chemically.

CYTOTOXIC SERUMS HAVING SPECIFIC ACTION

Very early in this work, the possibility of producing an antiserum that would have a specific action on a selected tissue attracted the attention of investigators, and von Dungern, on the basis of experiments with antiserum developed against ciliated epithelium, suggested the possibility of using an epitheliolysin to destroy unrecognizable cancer cells after an operation. Many investigators took up the question and cytotoxic serums of various degrees of activity and specificity were described during the next few years.

Several years ago, at the time I began work in this field it was generally believed that cytotoxic serum having specific action could not be produced. Such a deduction seemed justifiable on the basis of the experiments then available, but, because the methods were faulty, I was unwilling to accept the conclusion as final. Up to this time only crushed organs had been used as antigen. It seemed to me reasonable to believe that, if the characteristic proteids from different organs such as the liver and kidney, could be secured, a serum against them having specific properties, could be developed. It must certainly be believed that the varying function of different organs has a basis in their chemical constitution rather than in their morphologic structure or their nerve control. If this premise is accepted, it seems to me reasonable that what is believed to be the most important portion of the cell physiologically should be selected as an antigen. The nucleus is chemically unique and, as far as the evidence permits conclusions to be drawn, it is the most important physiologic structure in the cell. Its chemical basis is made up of nucleoproteids readily separable from the remaining albumins and globulins.

In 1905 I published a paper[5] giving the results of a series of experiments with immune serums developed by injection of nucleoproteids. These experiments gave evidence of specific cytotoxic action, more definite than any which had been published previously. At the Toronto meeting of the British Medical Association, I[6] read a second short paper dealing with the subject. Since these results have been made the basis of a therapeutic method, and since the validity of the observations has been entirely discredited in the minds of many by the few experiments of Pearce,[7] I wish to review the situation and present reasons for adhering to the belief expressed in my first paper on this subject, namely, "Such a thing as absolute specificity under all conditions has never been demonstrated and probably never will be, but it is possible to make a serum which will act primarily on a given organ."

Since the publication of the papers referred to above, I have made many experiments with nucleoproteid serums and have confirmed the position originally taken. The method of preparing the nucleoproteid has been practically the same as that outlined in my first paper, with the exception that blood-free organs have been used, and the prepared proteids have been preserved for injection by freezing rather than by chloroform or by drying.

If attempts are made to duplicate these results, I suggest that the method I have outlined for preparation of the proteids be followed. Pearce followed what he conceived to be an improvement, namely, the boiling of the hashed organ in salt solution previous to its filtration. This procedure undoubtedly hastened the filtration time, but it destroyed the biologic character of the proteid. It is known that many specific enzymes cling to nucleoproteids in their solution and precipitation; these would be destroyed by boiling. An excellent instance of the destruction of the specific character of a nucleoproteid by boiling may be seen in the case of the nucleoproteid of the parathyroid gland, which, when freshly prepared, is effective in relieving the symptoms of parathyroid tetany,[8] but which is absolutely useless for this purpose if it has been boiled. Since the publication of Pearce's paper, I have made experiments in which the prepared nucleoproteid was divided into two portions for inoculation, one portion boiled and the other unboiled. The unboiled proteid was effective, but I have never been able to get an active serum with the boiled proteid. With the exception of the means of preserving the proteid, the same methods have been employed in the production of the serum as were outlined in the previous papers. I quote from one of the former papers[6] certain observations regarding the difficulties to be encountered:

> The proteid should be freshly prepared before each inoculation to get the best results. Considerable difficulty was encountered in the failure of a large percentage of the animals to produce a highly active serum, even though they had the best of care and were inoculated with satisfactory proteids. For instance, out of a lot of five rabbits inoculated with liver nucleoproteids, only one produced a highly active serum; of four sheep inoculated with thyroid proteids, only one produced an active serum. My experience in this matter has led me to the conclusion that it is more difficult to form antibodies to nucleoproteids than to globulins and albumins.

EVIDENCES OF SPECIFICITY

The evidence on which I draw the conclusions of specificity is based on precipitation, agglutination, absorption experiments and on the effects of animal injections.

The Precipitin Reactions.—The precipitin reactions are specific except in high concentration, and here the relative speed and completeness of the reaction shows a decided preference of the serum to unite with its specific antigen.

In Tables 1, 2 and 3 are shown the reactions of different serums made against human nucleoproteids as antigen:

5. Beebe, S. P.: Jour. Exper. Med., November, 1905.
6. Beebe: Brit. Med. Jour., 1906, ii, 1786.
7. Pearce: Studies from the Bender Hygienic Laboratory, 1907, iii, 28.
8. Berkeley and Beebe: Jour. Med. Research, 1909, xx, 149.

TABLE 1.—ILLUSTRATING ACTION OF THYROID NUCLEOPROTEID SERUM ON THYROID, KIDNEY, SPLEEN, LIVER AND LYMPH-NODE NUCLEOPROTEIDS. HUMAN PROTEIDS.

	10 min.	30 min.	3 hrs.	24 hrs.
Thyroid N. P.	+	++	+++	+++
Kidney N. P.	—	—	?	+
Spleen N. P.	—	—	—	+
Liver N. P.	—	—	+?	+
Lymph-nodes N. P.	—	—	+	+

TABLE 2.—ILLUSTRATING THE ACTION OF KIDNEY NUCLEOPROTEID SERUM ON THE SAME NUCLEOPROTEIDS AS IN PREVIOUS TABLE

	10 min.	30 min.	3 hrs.	24 hrs.
Thyroid N. P.	—	—	—	—
Kidney N. P.	+	++	+++	+++
Spleen N. P.	—	—	?	+
Liver N. P.	—	—	—	?
Lymph-nodes N. P.	—	—	±?	+

TABLE 3.—SHOWING THE ACTION OF THE HOMOLOGOUS SERUM ON EACH NUCLEOPROTEID AT THE END OF THIRTY MINUTES

	Thyroid serum.	Kidney serum.	Spleen serum.	Liver serum.	Lymph node.
Thyroid N. P.	++	—	—	—	—
Kidney	—	++	—	—	—
Spleen	—	—	+	—	±?
Liver	—	—	—	++	—
Lymph-node	—	—	±?	—	++

During the last two years my colleague, Dr. P. A. Shaffer, has confirmed my results on the specific precipitin and agglutinin reactions obtained by nucleoproteid serums, and I am able to quote one of his tables (Table 4) in support of these statements.

TABLE 4.—RESULTS OBTAINED IN AGGLUTINATION AND PRECIPITATION REACTIONS WITH SERUM-DEVELOPED NUCLEOPROTEID AS ANTIGEN

	20 min.	30 min.	1 hr.	16 hrs.
Liver Suspension				
Kidney N. P. serum..	—	—	—	—
Liver N. P. serum....	—	—	+slight	++
Kidney Suspension				
Kidney N. P. serum..	+slight	+	+++	+++
Liver N. P. serum....	—	—	+slight	++
Liver Nucleoproteid				
Kidney N. P. serum..	—	—+very slight		+
Liver N. P. serum....	+slight	+	++	+++
Kidney Nucleoproteid				
Kidney N. P. serum..	+slight	+	++	+++
Liver N. P. serum...	—	—	+	+

The Agglutination Reaction.—This reaction closely resembles the agglutination reaction which is used so much in bacterial immunity work. The emulsion of fine organ particles is prepared as follows: the tissue is ground in a fine hashing machine and the pulverized mass suspended in normal saline. This suspension is centrifugated in a high speed machine with the result that the finer particles come down at the top of the sediment. These are removed by a pipette, suspended in salt solution and the suspension filtered through cotton; such an emulsion will be found to be serviceable for the flocking or agglutination reactions. The reaction is highly specific.

TABLE 5.—SHOWING THE REACTION OF THYROID ANTISERUM ON EMULSION OF THYROID, KIDNEY, LIVER, SPLEEN AND LYMPH-NODE

	5 min.	10 min.	20 min.	3 hrs.	24 hrs.
Thyroid	+	+++	+++	+++	+++
Kidney	—	—	—	±	+*
Liver	—	—	—	—	—?
Spleen	—	—	—	—	—?
Lymph-node	—	—	—	—	—?

* At 24 hours the kidney showed a mild positive agglutination, but the others were no greater than controls.

Agglutination reactions of this sort have been obtained by a variety of serums, and with active serums the specific character is marked, as is shown in Table 5. The reaction is more readily carried out than the precipitin reaction, for the success of the latter depends on the use of perfectly fresh nucleoproteids and also on a neutral reaction. If the reaction is too alkaline, as is likely to be the case unless especial care is exercised, no precipitin reaction will be obtained, even with highly active serum.

Absorption Experiments.—In addition to the above reactions, absorption experiments have been tried as follows: The serum was mixed with finely hashed muscle tissue from the same animal species as the antigen from which the serum was developed, that is, serum developed by the injection of dog kidney nucleoproteid, was absorbed by finely chopped dog muscle. The mixture was allowed to remain in the incubator for fifteen minutes and was then transferred to the refrigerator for three hours. At the end of this time the extract was centrifugated and filtered, and the clear serum thus obtained was used in the same kind of precipitin and agglutination experiments as outlined above, with the result that both reactions still occurred, though they were somewhat weaker than before, but they had a more specific character. The common factors had been absorbed, but the specific ones remained. Such absorbed serum is not hemolytic, but retains its power of acting on the specific antigen.

Animal Inoculation.—The most searching and conclusive method of demonstrating the specificity of the serum, however, is by means of animal inoculation. In my first paper was published evidence to show that serum developed from the selected antigen had a markedly special action on its appropriate organs. The nephrotoxin caused acute nephritis, while the hepatotoxin caused focal necroses and general granular and fatty degeneration of the liver. These lesions were acute, and caused the death of the animal.

In attempting to repeat these animal experiments with an inactive serum which he had prepared by a faulty method, Pearce drew the conclusion that "such serums have mildly toxic properties acting in a general way and affecting especially the principal excretory organ, the kidney." He admits, however, that it is difficult so to explain the severe albuminuria which I described. To bring the matter clearly into view, I quote from my first paper results which have been repeatedly verified since:

A fox-terrier bitch of six kilos body weight was kept in a cage for three days for observation. The animal was in a perfectly healthy condition, as far as could be determined, and examination of the urine showed the kidneys to be sound. On April 8, 12 c.c. of nephrotoxic serum were injected into the femoral vein, using morphin and cocain as anesthetics. The animal showed the usual behavior toward the serum. The urine was collected daily, but no albumin appeared until April 12, when a trace was found by using the acetic acid and potassium ferrocyanid test. The albumin increased in quantity daily, the animal remaining normal in behavior until April 14. On April 15 she ate very little and later in the day vomited; the following day she refused to eat. The urine on this day solidified in the tube when heated, and analyses showed that 53 per cent. of the total nitrogen excreted in the urine was in the form of albumin. Abundant granular and hyaline casts also were found. The animal was very sick, the rectal temperature being 98 F. in contrast to 102 previous to the inoculation. On April 17, the rectal temperature had fallen to 95, and since it was evident that the animal would die shortly, chloroform was administered. The autopsy showed

the liver to be slightly congested, but otherwise normal; spleen, normal; kidneys, swollen and pale yellow with punctate hemorrhages and obscured markings. About 50 c.c. of clear, straw-colored fluid were in the peritoneal cavity.

The histologic examination of the tissues showed the following conditions: The liver shows a few vacuoles uniformly distributed in the cells and slight congestion of blood-vessels. No marked degeneration and no necrosis occur. The impression given by the section is that the organ is in a normal condition with no pathologic change. The pancreas, spleen, and lymph-nodes are normal.

The kidneys are very much congested, and on microscopic examination the blood appears to be agglutinated, though this appearance may be, and probably is, an artefact. Much cast matter exists in the tubules of the cortex and medulla, and many tubules are filled with blood. The tubules in places are considerably dilated, especially where there are casts. The tubular cells are separated by spaces, somewhat shrunken, often split lengthwise, and eroded. The nuclei stain poorly and some mitotic figures are seen. The glomeruli are normal.

Five additional dogs to which this serum was given showed practically the same lesions. In some cases from 350 to 500 c.c. of bloody serum were found in the peritoneal cavity at the autopsy. If the animal was killed before the process had reached such extreme conditions, the peritoneal cavity was free from fluid. There seems to be no doubt from these findings that this nephrotoxin sets up an acute degeneration of the kidney tissue, from which certain secondary changes in the liver might possibly be expected to result, but there was no evidence in these experiments that any of the lesions were caused by hemolytic or hemagglutinative properties in the serum.

With the serum made by injecting liver nucleoproteids I have produced very serious lesions of the liver, apparently without causing injury to other organs. I shall give an illustrative case:

A fox-terrier bitch of 3920 gm. body-weight was kept under observation for six days previous to inoculation. The urine was normal in every respect. On May 2 intraperitoneal inoculations of hepatotoxin were begun. These were of 2 c.c. each, and were made on the following dates: May 2, 3, 5, 10, 12, 13. The animal weighed 4125 gm. on May 15 and for some days had been quite sick, but its condition was not so serious as that of other animals undergoing similar treatment, and was far less serious than the condition of the animal described in which the nephrotoxin had been injected. There was no indication at this time of severe hepatic lesions. At no time had the urine showed the least trace of albumin or sugar. The animal was killed by chloroform on May 15. The autopsy made one-half hour after death showed the kidneys, spleen, and pancreas to be normal. There was no fluid in the peritoneum, and all the organs appeared healthy except the liver, which was curiously mottled and showed an evident fatty condition. The following is a brief report of the histologic examination of the tissues made by Dr. Ewing:

The liver, which is altered pathologically, shows areas one-fourth to one-half the size of the lobules in which the liver cells are invisible or missing, or the tissue is substituted by a mixture of necrotic liver cells, and detritus. Many of these areas appear to surround central veins. The liver cells in general show intense granular and fatty degeneration, and congestion, most marked in and about the necrotic foci where the red cells appear to be more or less fused. The fusion of red corpuscles may be a post-mortem change. About the hepatic veins round-cell infiltration exists.

The kidney shows nothing worthy of note except an accumulation of large round cells about the glomeruli. The tubules, normal in size and not dilated, contain a slight granular coagulum.

The spleen is normal.

It is evident, therefore, that this serum has caused a profound change in the liver, but has not damaged other organs. I do not think it probable that the specific action on the liver is to be attributed to the hemolytic and hemagglutinative effects of the serum. The difference in the action of this serum and that of Pearce and of Woltmann is undoubtedly to be explained by the fact that in its preparation it has been possible to eliminate from the tissue injected a large amount of extraneous material, as, for example, bile, which previously was included and which undoubtedly influenced the qualities of the serum.

I call attention again to the fact that, on the intravenous injection of the serum, an immediate reaction occurs which is much more marked than occurs with the same quantity of normal serum. This general reaction is evidently an expression of the general toxic character of the serum. It passes in a few hours, however, and the next day the animal is normal. The specific effects which prove serious are not manifest for several days, even though the serum has been given in one injection, and although the lesion may go on to a fatal termination.

Another point of interest is to be found in the fact that not all animals react alike to active serum. A serum which causes an acute fatal nephritis in one animal may cause in the same dose a milder lesion in another animal. Two dogs were given the same dose of an active hepatotoxin; one died in eight days, while the second, although severely ill, recovered after a period of two weeks.

The results which have been cited above appear to me to warrant the use of the term special or specific in their description. It is admitted that the work requires special attention to the technic, but I believe that other investigators can duplicate the results cited.

The bearing which these experiments have on pathology and therapeutics seems to me to be obvious. It is known to many that serum has been developed against the proteids of the human thyroid gland, and that such serum has been used clinically in the treatment of Graves' disease.[9] Other possibilities suggest themselves.

At the time the first paper was published there was little evidence to show that immunity could be developed against a nucleoproteid. During the last few years, however, many investigators have used bacterial nucleoproteids as antigen for the purpose of developing immune serum and for vaccination. Without question, these proteids have been effective for the purpose used, and it is probable that the next few years will see a considerable increase in the application of this method in bacterial immunity.

IMMUNITY TO CANCER

It seems probable I shall do violence to no one's cherished belief in the infectious origin of tumors, if I include in this discussion the question of immunity to cancer. Within the last six years a large fund of information regarding the transplantability of malignant growths in animals and the conditions under which they develop, recover and are immune have made this field one of the most interesting in medical research. The founders of this line of investigation, Loeb and Jensen, had the imagination to see the large possibilities which their work introduced. Jensen observed the existence of natural immunity and attempted to produce active immunity by means of a cytolytic serum with some degree of apparent success, although subsequent work has failed to corroborate his observations in their entirety. He likewise suggested that active immunity might be developed in the patients by treating them with their own cancer cells, that is, by a kind of vaccination. These observations were the beginning of the extensive researches which have filled the last

9. Rogers, G., and Beebe, S. P.: The Treatment of Thyroidism by a Specific Cytotoxic Serum, Arch. Int. Med., 1908, ii, 297.

few years, but, as usual, they were received with a high degree of skepticism when first announced. Many of us recall with what degree of incredulity we saw the first transplanted tumor in rats exhibited by Loeb.

Soon after Jensen's result became known, many other investigators took up the question, and various attempts were made to produce active cytolytic serums against cancer cells, and also to treat cancer patients with injections of carcinoma extract, and for some time the results were encouraging. No satisfactory results were obtained, however, by any of these procedures. At about this time I produced an active cytolytic serum from the nucleoproteids of a breast carcinoma and treated the patient from whom the tumor was removed by this serum. The object in view was to prevent a recurrence; but, since the operation had been a radical one, no conclusions in regard to its value may be drawn, although the patient did not have a recurrence. The observation by Gaylord and Clowes that a certain percentage of the mice inoculated with the Jensen tumor recovered and were thereafter immune was the first authentic experimental production of immunity in tumors. Although the accuracy of these observations was at first denied by many investigators, including Ehrlich and Bashford, they have been abundantly confirmed by all cancer workers, and at the present time investigations have been made on malignant tumors in mice, rats, dogs and rabbits all of which agree in what appear to be certain fundamental principles in cancer immunity.

The first of these principles is that a varying percentage of animals is normally immune to the tumor; the reason, however, is unknown. In some instances, apparently, it is related to the external physiologic surroundings, such as climate, food and water supply and, in other instances, to the inherent character of the tissues in which the tumor is planted.

The second principle is that a varying percentage of successfully inoculated animals recover spontaneously, the number depending on the virulence of the tumor and the resistance of the animal. We have found means to increase the virulence of the tumors, the most successful of which are as follows:

1. Growing the tumor in particularly susceptible animals.
2. Selecting carefully those tumors which give the highest percentage of takes.
3. Preliminary heating of the tumor to an optimum temperature.
4. Selecting the most suitable location for the implantation; the axilla has been found better than the dorsal region for certain tumors.
5. Selecting the older tumors in preference to the young.
6. Implantation from the metastases instead of the original tumor.

The resistance of the animal, likewise, may be modified by various procedures, the most important of which are as follows:

1. Making the first implantations from avirulent tumors and using the immunity thus awakened to combat the more virulent strains later.
2. Subjecting the grafts before implantation to the effect of recovered immune serum.
3. Implantation of small amounts of tumor; animals may resist a small dose and the immune forces thereby be stimulated to the resistance of a larger amount.
4. Preliminary transplantation of heterologous tumor cells.
5. Preliminary injection of embryonic tissue, various organ tissue or even blood of the homologous species.

The third important principle is that the recovered animal is immune for a long time to further implantation of tumors of like virulence, and as a consequence of this principle the highest degree of immunity with which we are familiar occurs in those animals which have grown a virulent tumor and have spontaneously recovered therefrom aided, perhaps, by some one of the various methods under our control.

Immunity to tumors is not to any considerable extent a serum immunity, inasmuch as the usual methods of demonstrating immune factors by serum reactions have in most instances been negative. Clowes, however, found that serum from a recovered animal had a deleterious effect on tumor cells, preventing their growth in a considerable percentage of cases on subsequent transplantation. What seems the most conclusive demonstration yet published of the fact that the serum of a recovered animal has antagonistic action on the tumor, is found in the results published by Crile and myself,[10] in which it was shown that transfusion of large quantities of recovered blood to an animal with actively growing tumors would cause complete absorption of the latter, with the usual subsequent immunity to further implantation. More recently, I have carried out a further series of transfusion experiments,[11] in which I have found unmistakable evidence that the regression of the tumor is an essential factor for the future immunization of the animal, and that transfusion of immune blood into an animal susceptible to the tumor, but free of tumors at the time of the transfusion, does not confer immunity for subsequent implantation. There apparently must be some interaction between the serum and tumor by which the regression is started, the immune forces of the animal thereby awakened and future protection assured.

It is not necessary, however, for the animal to have large tumors at the time of the transfusion or that time should be allowed for their complete absorption in order to show immunity. At the present time the methods which appear to be available for immunizing an animal with growing tumors are as follows, it being understood that these methods are successful in only a certain percentage of cases: First, Gaylord and Clowes[12] have shown that by repeated subsequent implantations of tumors, the later plants grew for only a short time and that the original tumor soon felt the effects of the developing immune forces and was completely absorbed. Second, Gay[13] has modified this procedure by obtaining complete absorption of the first tumor by the subsequent transplantation of only one graft, provided it was done before the development of metastases. Similar observations have been made by Van Dungern and Coca,[14] working with the transplantable sarcoma of hares. It would seem, from the results of these experiments, that a method of vaccination is a logical procedure in the treatment of malignant tumors; but it must be observed that efforts to accomplish the same results with tumor extracts, or with tumor cells killed by heat or chloroform or other physical means, have not served to stimulate the development of the immunity. Nothing short of the living tumor-cells is capable of having such an effect. Clowes and Gaylord[12] showed that the blood from recovered mice unfavorably affects the growing tumor and the transfusion experiments above quoted lend strong con-

10. Crile and Beebe: Jour. Med. Research, 1908, xviii, 385.
11. Beebe: Jour. Med. Research, 1910, xxii, 389.
12. Gaylord and Clowes: The results of these investigations are found in Reports of the New York State Cancer Laboratory, 1906-1909.
13. Gay: Jour. Med. Research, 1909, xx, 175.
14. Von Dungern and Coca: Ztschr. f. Immunitätsforsch. u. Exper. Therap., 1909, ii, 391.

firmation to the belief that the serum contains some effective factor, although it must be present in small concentration and of a low degree of potency.

The interest which all cancer investigators have had in these experiments on cancer immunity has been greatly stimulated by the recent observations of Hodenpyl.[15] He was fortunate in having under his observation a human patient with carcinoma who showed most remarkable spontaneous regression of a far-advanced tumor, the tumor being primary in the breast with extensive metastases in the liver. The regressive processes were accompanied by the production of chylous ascitic fluid; this observation was quite in harmony with that published by Mackay[16] in 1907, the difference being that in this latter instance the recovery was ushered in by the production and absorption of a pleural exudate. The chylous ascitic fluid obtained by Hodenpyl has been injected subcutaneously and intravenously in a considerable number of patients with very favorable therapeutic effects in many instances. In some cases there was at first complete absorption and apparent recovery, but during the last few weeks these patients have shown a renewal of the growth. It is, of course, impossible to say in what manner this fluid acts, but in view of the experimental work of the last few years the results do not seem surprising. Startling as have been some of the effects following injections of this fluid, the procedure seems to be a logical one and, regardless of the ultimate outcome of the observations, they have at least served the purpose of awakening in us new interest and of giving us a new lead in this most perplexing and difficult line of work.

414 East Twenty-Sixth Street.

SOME POINTS IN THE APPLICATION OF VACCINE THERAPY *

ERNEST E. IRONS, M.D.
CHICAGO

The literature of the past year on vaccine therapy is characterized by a tendency to study more carefully the methods of use and the limitations of vaccines rather than to extend the range of their application. We have much theory in regard to the various methods of aiding Nature in the establishment of immunity, but our knowledge of what really happens when we inject a bacterial emulsion into a patient is still incomplete.

Those who have studied vaccine therapy from both the laboratory and the clinical sides will, I believe, agree that the method, either alone or in conjunction with other appropriate measures, may accomplish definite results, especially in localized infections, and that while control by means of serum and leukocytic reactions is often a valuable aid, the chief guide in the selection of cases and of the vaccines for their cure must come from clinical observations.

I wish to emphasize certain well-recognized principles in the use of vaccines, the neglect of which has laid vaccine therapy open to criticism, and often led to failure. In this brief discussion many statements must necessarily be dogmatic, but I believe they present the consensus of opinion on the subject.

The inoculation of bacterial emulsions is not a "cure-all" for infections to be used to the exclusion of surgical measures. The treatment by vaccines alone of an acute abscess which ought to be incised, deserves all the condemnation it has received from the critics of vaccine therapy. Nor are all patients with infections suitable subjects for vaccine treatment. The fundamental theory of bacterial therapy assumes that the body is capable of reacting to the inoculation by the formation of antibodies which aid in limiting the infection. Theoretically the giving of vaccines as ordinarily prepared to a patient whose body is already overwhelmed with infection is wrong, and clinically the results in such cases are usually bad. A critical examination of the clinical histories in those cases of supposed severe sepsis in which vaccines were used with apparent favorable outcome will frequently show that in many a definite general sepsis was not present. High fever is often one of the symptoms of general sepsis, but its presence does not necessarily indicate that general sepsis exists. A persistent bacteriemia is often demonstrable, and is a most reliable indication of the so-called septic condition. We know, however, that a transient bacteriemia may occur in localized infections, so that even the finding of bacteria in the blood on one examination is not positive proof of the generalized character of an infection. The diagnosis of general sepsis rests on a careful weighing of the condition of the patient as to pulse, temperature, prostration, etc., together with the data obtained from the laboratory. Furthermore, the occasional recovery from general sepsis after the use of vaccines does not form an indisputable argument in favor of vaccine therapy in such cases for in some cases of sepsis recovery occurs spontaneously. The giving of vaccines as a last resort while it may be justifiable in certain instances, is not to be encouraged, for the patient is often harmed instead of benefited.

The relative value of stock and autogenous vaccines is fairly well established. All observations indicate that autogenous vaccines are always desirable, although in certain superficial infections and in some localized gonococcal infections, stock vaccines have given good results. Aside from their inferior therapeutic virtue, a further objection to the general use of stock vaccines is that it fosters the feeling that when a dose of vaccine has been procured and injected, the physician's duty is ended until the next dose is due as stated on the label. Both the dosage and the interval between injections require careful correlation with the clinical symptoms. The giving of vaccines consisting of a mixture of such organisms as happen to grow in cultures from a sinus, or of a mixture of stock vaccines, without regard to the predominating organism of the infection, in the vague hope that good may come, is unscientific and productive of harm. It is hardly necessary to emphasize the importance of employing pure cultures in making vaccines; especial care must be taken to avoid introducing some of the spore-bearing organisms such as that of tetanus.

Should vaccines be used only by those who have laboratory facilities and are specially trained in the methods of vaccine therapy? I believe that this question, frequently asked, is answered by the statements I have just made. If a physician is a good clinical observer and has a general practical knowledge of the principles of active immunization, and is willing to devote sufficient time to a careful observation of his patient, over whom he must have adequate control, then he is competent to use this form of therapy, at least in those forms of infection in which favorable results are ordinarily obtained. If he is not able to meet these condi-

15. Hodenpyl: Med. Rec., New York, 1910, lxxvii, 389.
16. Mackay: Brit. Med. Jour., July 20, 1907, p. 138.

* Read in the Section on Surgery of the American Medical Association, at the Sixty-first Annual Session, at St. Louis, June, 1910.

tions, then for the sake of his patient, he should leave the case to some one better prepared. Personal preparation of the vaccines, or at least an oversight of their preparation will contribute materially to his intelligent use of them.

The therapeutic value of vaccines is most conclusively demonstrated in chronic or recurrent localized infections, in which the results with and without vaccines can be readily observed. In staphylococcus infections, such as furunculosis, the inoculation treatment is of unquestionable value. In acne, vaccines have been of benefit in many cases. In carbunculosis, the use of vaccines combined with appropriate surgical measures hastens the cure, and often will render unnecessary the extensive surgical procedure formerly required. Infections of the urinary tract due to the colon bacillus, have received much attention during the past year, and the reports indicate that good may be accomplished in the alleviation of local distress, pyuria and general symptoms by the inoculation of autogenous colon vaccines. Something over 50 per cent. of urinary infections are due to the colon bacillus, and in still more, this organism is associated with other bacteria. In the mixed infections, combined vaccines have been used with advantage. The study of a series of urinary infections by Davis showed that in addition to the true colon bacillus, certain colon-like hemophilic organisms were sometimes met with, which presented peculiar cultural reactions, and were associated with pronounced hematuria. Vaccines prepared from these organisms apparently benefited the hematuria, but, as frequently occurs in colon infections, the bacilluria persisted after the subsidence of clinical symptoms. Colon infections of the prostate which have resisted all ordinary treatment have in a number of instances been improved by vaccines.

Streptococcus infections have not yielded to vaccines so satisfactorily as have those due to the staphylococcus. In erysipelas, the clinical course is so variable that conclusive evidence is difficult to obtain, but it appears that some benefit is derived from the use of autogenous vaccines. Modifications in the preparation of streptococcus vaccines by substituting sugar solutions for heat in sterilizing the emulsions may give better clinical results. Opinion is divided as to the advisability of giving vaccines in puerperal sepsis. In the severely toxic cases at least, one should hesitate before adding to the toxemia of the patient by inoculations of vaccines as they are at present prepared.

Fistulous tracts and other localized infections about the nose, throat and ear associated with staphylococcus, streptococcus or pneumococcus are reported as favorably influenced by vaccines in combination when necessary with appropriate surgical measures. In surgery, prophylactic inoculations of staphylococcus, streptococcus and colon vaccines prior to operation have been proposed as a means of preventing postoperative infections in cases in which they are likely to occur. Sufficient data are not yet at hand for the formulation of an opinion as to the advisability of this procedure.

Gonococcal metastatic lesions of the subacute and chronic type are often greatly improved and cure hastened by the inoculation treatment. The best results are seen in arthritis and in lesions of the periosteum and tendon sheaths. In acute arthritis the results are not so favorable, and in cases with high fever and severe toxic symptoms the employment of vaccines should be postponed. In urethritis, gonococcus vaccines have given indifferent results. The possible prophylactic value of gonococcus vaccines in preventing metastatic complications of acute urethritis has been suggested. In vulvovaginitis in children, the period of treatment is apparently shortened in some cases by inoculations.

The treatment of tuberculosis of bones, joints and glands by tuberculin continues to receive the approbation of clinical investigators, and when carefully employed in suitable cases assists in the healing process. The danger of undesirable reactions is less than in cases of pulmonary tuberculosis.

A striking proof of the efficacy of bacterial inoculation in producing immunity is found in the statistics of the prophylactic inoculation against cholera, plague and bacillary dysentery. The incidence of these diseases in regions where they are endemic is reduced by this method to a small fraction of the incidence among the uninoculated, and the death-rate in the protected persons who do contract the disease is much less than in those not treated. Similar results have been obtained in typhoid fever in the British and other armies, and have been confirmed by our own army medical officers. The evidence in favor of the use of typhoid vaccines in the treatment of the disease does not yet warrant any opinion of their value. The prophylactic use of streptococcus vaccines in scarlet fever is receiving much attention, particularly by Russian physicians, whose statistics appear to show a remarkable immunity to the disease in those who have received the protective vaccines.

Ulcerative endocarditis due to the staphylococcus, streptococcus, pneumococcus and gonococcus has been extensively treated by autogenous vaccines, but the results in the majority of cases have been unfavorable. Occasionally transient improvement is seen, but usually the inoculations have failed to stay the course of the disease.

While it is believed that for the present the general practitioner will do well to confine the use of vaccines to cases of localized infections, mention should be made of the recent work on the treatment of pneumonia by the inoculation of preparations of the pneumococcus from which the toxic portion has been removed. This work is in the early experimental stage, but it suggests the possibility of advance in our methods of combating the more serious bacteriemias.

The local and general reactions which follow the injection of dead bacteria and their products deserve more attention than they have heretofore received. With the exception of the tuberculin reaction and the mallein reaction in glanders, very little use has been made of the similar phenomena which follow the injection of bacteria in their respective diseases. Not only may these reactions be utilized as a guide to dosage and frequency of the inoculations, but they offer valuable confirmatory aid in diagnosis. In typhoid infections a characteristic cutaneous reaction can be obtained by the local application of a preparation of typhoid bacilli. In gonococcus infections a characteristic local and general reaction follows the injection of gonococcus vaccines. This reaction has been found of assistance in the diagnosis of obscure cases of arthritis and other metastatic lesions. Other vaccines, such as the staphylococcus and colon, when inoculated into persons suffering from lesions due to the corresponding organism, cause local and general reactions which in some cases may prove of diagnostic value.

Bacterial vaccines are powerful agents for good or harm, and as such, should be used intelligently, where

indicated, as an adjunct to other recognized methods of treatment, and in the interpretation of clinical results greater care than hitherto should be taken to avoid over-enthusiastic and unwarranted conclusions.

150 Michigan Boulevard.

ABSTRACT OF DISCUSSION

DR. JOHN B. DEAVER, Philadelphia: The ground has been covered so thoroughly by Dr. Irons that I cannot add anything more to the paper. My experience with the vaccine treatment has been considerable and my results harmonize with the indications which Dr. Irons has so plainly drawn in his paper. The question of the opsonic index I do not think is of great moment, because you have to judge entirely from the clinical features of the case. The various conditions which Dr. Irons brought out were verified in our work in the German Hospital, particularly in the cases of *Staphylococcus albus* and *Bacillus coli* infections of the pelvis, of the ureter, and of the bladder. In these cases we got splendid results. In the streptococcus infections, the acute conditions, such as peritonitis, if localized, we had fair results. In cases of infection with the *Staphylococcus pyogenes* in peritonitis, consequent on childbirth, we have had good results.

I believe that vaccine treatment must be considered as a double-edged sword, and should be carried out with great care. The clinician should be the one to decide on the manner and mode of administration of the vaccine. The vaccine, of course, must be prepared by a laboratory man. Since the experience of Dr. Murphy, I use tuberculin in bone tuberculosis, glandular and peritoneal tuberculosis and tuberculosis of the genito-urinary organs quite extensively, and I have no hesitancy in saying that in many instances it is the *sine qua non*.

DR. A. W. CRANE, Kalamazoo, Mich.: The statement should not go unchallenged that there is nothing in the opsonic index and that the effect of the treatment can be judged by the clinical symptoms alone. The admirable work done by Wright has shown the value of the opsonic index, particularly as a guide in treatment. There is no symptom or combination of symptoms or signs which indicate the rise and fall of the opsonic index when a vaccine injection is made. The result depends on the accumulation in the serum of opsonins and the ability of the leukocytes to perform the work of the phagocytes. We can get a reaction following an injection of the serum similar to what we have in the beginning of any infectious disease, but we cannot judge from that what follows. We do not know whether we have a rise or fall of the opsonic index, and on that condition of the blood depends entirely the time for giving the next dose and the quantity to be given. I am not surprised at Dr. Deaver's expression, because we all know that he is a sufferer from chronic laboratoryphobia. I remember his opinion with reference to the value of a general blood examination, and while he expressed himself rather forcibly, I think we are all agreed that the laboratory man has established his right to existence. It is possible to-day to estimate the opsonic index without resorting to the laborious and time-consuming procedure of Wright. It is possible to estimate it without a greater expenditure of time than is necessary to make a leukocyte count, and no instrument outside of an ordinary equipment is needed, except a bit of clockwork which will revolve a leukocyte pipette twice in one minute.

There is a relation between vaccine injections and *x*-ray treatments. When tuberculous glands of the neck are treated by the Roentgen method the result differs in no wise from the result obtained following the injection of tuberculin—not Koch's old tuberculin, but the bacillary emulsion. There is produced by the *x*-ray an autogenous vaccination. The opsonic index rises after the *x*-ray treatment, and we have a phenomenon which is precisely parallel to that obtained by the injection method. I think that when this is thoroughly understood and when the details are worked out, we will have a valuable means in the *x*-ray of introducing autogenous vaccines into the circulation.

DR. W. W. GRANT, Denver: In Colorado we have a great deal of tuberculosis, of both a medical and surgical nature. The stock vaccines and the autogenous vaccines are both used extensively. My medical friends in the sanatoriums of Colorado are using them more extensively every day, and they record some rather interesting results. They find that in many of these cases the pneumococcus is particularly conspicuous, and that following the use of autogenous vaccines expectoration rapidly diminishes. I have often been disappointed in the treatment of caseous tuberculous glands with vaccines, and yet it is very gratifying in some cases to have the discharge cease, although eventually the sinuses opened up again. In some cases I supplemented this treatment with the bismuth paste with good results. In one particular class of cases I have had very satisfactory success, that is, the colon bacillus infections of the bladder. I have had cases that I treated with drainage and irrigation without good results. I discontinued all local treatment and injected autogenous vaccines made from the colon bacillus, after it had been demonstrated that that was the principal germ present, and I have had these cases progress very satisfactorily under this treatment.

We often find in these cases a mixed infection, and I do not hesitate to have vaccines made, using them freely. I believe that substantial progress is being made in this direction, although we must remember that the vaccines should be made in a scientific way by competent men in the laboratory. The surgeon, however, should be the one to carry out the treatment.

DR. E. E. IRONS, Chicago: The study of opsonins in infectious processes has played an important part in the development of vaccine therapy. However, the opsonic curve is the expression of only one of the many changes which may take place in the body fluids in response to infections, and its determination requires laboratory facilities not available in many cases in which vaccines may profitably be used. In general, careful clinical observations furnish the most reliable indications for the regulation of the size and interval of the inoculations.

AUTOGENOUS VACCINE THERAPY IN ENDOCARDITIS *

E. C. ROSENOW, M. D.
CHICAGO

The therapeutic value of the injection of dead bacteria in certain localized infections, particularly those of long duration, can no longer be questioned. Their effect in the more generalized infections, particularly in endocarditis, is still very questionable. Wright,[1] Conder,[2] Barr and Bell,[3] report one case each of recovery, while Thompson[4] reports three recoveries out of a total of seven cases of endocarditis under vaccine treatment. Others have reported a few recoveries. A study of the cases of recovery shows that all were acute infections caused by more or less highly virulent organisms following a definite often severe local infection, and usually developing metastatic abscesses, the cases presenting a picture of pyemia; the type of endocarditis from which every now and then a patient recovers quite independently of the kind of treatment. Horder,[5] Billings,[6] Osler,[7] Libman and others have had uniformly negative results. The cases studied by them were chiefly

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

* From the Memorial Institute for Infectious Diseases. This work was aided by a grant of the American Medical Association and by the Dane Billings Fellowship in Medicine in Rush Medical College, Chicago.

1. Wright: Studies on Immunity, Constable & Co., London, 1909.
2. Conder: Practitioner, August, 1909.
3. Barr and Bell: Lancet, London, Feb. 23, 1907, p. 499.
4. Thompson: Am. Jour. Med. Sc., 1909, new series, cxxxviii, 169.
5. Horder: Quart. Jour. Med., 1909, ii, 289.
6. Billings: Arch. Int. Med., 1909, iv, 409.
7. Osler: Quart. Jour Med., 1909, ii, 219.

those which show insidious outset, a prolonged course and which show a progressive anemia and from which organisms with a low grade of virulence are isolated—the type known as chronic septic or infectious endocarditis. In this form of endocarditis all observers report an invariably fatal termination, regardless of the form of treatment employed. All agree that the injection of large doses (200,000,000 and over) do harm. Most observers have noted temporary good effects from the injection of small doses (from 10,000,000 to 100,000,000).

In malignant endocarditis it is obviously difficult to judge, on purely clinical grounds, the effect of the injection of dead bacteria. The series of experiments reported by me recently[8] were undertaken in order to throw more light on the mechanism involved; to determine more accurately the dosage, etc., and to determine why the patient who has an endocarditis of the chronic type in which bacteria of a very low grade of virulence are found dies, while in the more acute infections due to highly virulent organisms, the patient occasionally recovers.

In the first series of experiments it was shown that the injection of dead bacteria always raised the opsonic index when low and increased the leukocytes, but the cases studied went on uninterruptedly to a fatal termination regardless of the increase in leukocytes and opsonic index occasioned by the vaccinations. Very late, however, when the index had dropped far below normal, temporary good effects were noted. It was observed, too, that at times the bacteria behaved very peculiarly toward the patient's own blood. The second series of experiments consists largely of a daily study of the clinical picture and the temperature, the leukocytes, the phagocytic and, what is more important, the destructive power of the patient's blood as compared with normal blood, together with the number of bacteria in the circulating blood.

The more important results brought out by this study may be summarized briefly as follows:

The evidence seems conclusive that the continuation of the infection in chronic infectious endocarditis is due largely to a process of immunization or adaptation of the bacteria to the antibodies of the host. This is shown by the facts (1) that the bacteria grow much more rapidly in the patient's serum than in normal serum; (2) that when grown in the patient's blood or serum both *in vivo* and *in vitro* they acquire a resistance to phagocytosis and a resistance to intraleukocytic destruction; and (3) that they produce alterations in the serum of the patient which robs the leukocytes of something which they need to digest the bacteria when taken up. The destroying power of the patient's blood at these times was found far below that of comparable normal blood. This peculiar behavior of the patient's bacteria and blood was found particularly striking during the time when the number of bacteria are increasing in the circulating blood and for variable periods previous to the occurrence of embolism or arthritis. During the clinical reaction occasioned by a shower of emboli or joint involvement (auto-inoculation) or following the injection of dead bacteria, and especially of normal human serum (which was found to activate the patient's blood *in vitro*) or serum and dead bacteria combined, this peculiar relation of the patient's serum, leukocytes and bacteria disappears, the destructive power of the patient's blood returns and the number of bacteria in the blood shows a corresponding drop. The patient is temporarily improved but weaker than before. The severity of the clinical reaction and the exhaustion of the patient seem to depend (within certain limits) more on the number of bacteria destroyed in the circulating blood than on the number or size of bacterial emboli (auto-inoculation) or the quantity of serum or dead bacteria injected. Thus on four occasions in one case when the bacterial count was high the injection of 20 c.c. of normal human serum produced a very severe clinical reaction and the number of bacteria showed a marked drop. Transfusion of blood at this time would seem to be dangerous.

The injection of the same amount of serum on fourteen other occasions when the bacteria were at a low point caused no demonstrable clinical reaction and seemed to keep the bacteria at a low point for a period of three weeks. The destroying power of the patient's blood during this time remained up to the normal point. Similar results have been obtained in two other cases. Another striking fact was noted which adds significance to the observations, viz., that often during the time when the bacteria in the blood are on the increase and the destroying power of the patient's blood is below normal the temperature and leukocyte count are lower and the patient seems better. The temperature, however, at once rises when the drop in bacteria begins. In other words, the destruction of bacteria liberates a toxic material which poisons the individual. Hence to combat endocarditis successfully it is necessary to inject, in addition to something which activates the patient's blood, a neutralizing substance which would prevent the intoxication of the already overwhelmed patient. The outlook for a specific serum, however, is very gloomy because the results of animal experiments show that the injection of organisms isolated from chronic infectious endocarditis (which appear to be modified pneumococci) produce an increased susceptibility to subsequent injections instead of an immunity. Moreover, when we bear in mind that in acute malignant endocarditis we are dealing with an overwhelming infection and that in chronic infectious endocarditis the reactions produced by vaccination and even by the injection of normal serum in no way differ from those occasioned by embolic processes (auto-inoculation) and that experimental evidence points strongly to a very early and profound alteration in the mechanism of immunity, it would certainly seem that injection of dead bacteria would be of very small therapeutic value if indeed not actually harmful.

150 Michigan Avenue.

8. Jour. Infect. Dis., Chicago, 1909, vi, 245; 1910, vii, 429, abstr.

Tuberculin in Treatment of Detachment of the Retina.—L. Dor of Lyons, reports 5 cases of detachment of the retina in which a course of tuberculin treatment was followed by a complete cure in 3 cases, a cure in another case; with recurrence which in turn was cured; in the fifth case no benefit was apparent. Three of the patients were known to have tuberculous processes elsewhere and one of these was the patient who was not benefited. In one case the retina suddenly became detached in both eyes; the patient was a woman of 40, hypermetropic, on whom Lyons had operated 5 years before for chronic iritis in both eyes. He discovered tubercles in the iris and under the influence of 100 injections of tuberculin the tubercles subsided and the retina became reattached. Detachment has reoccurred twice since, but each time the retina became reattached and vision is as good as before. Four months have elapsed since the reattachment occurred last. His communication on the subject was published in the *Klin.-therap. Wochenschrift*, 1910, xvii, 570.

THE SIGNIFICANCE OF TUBERCULIDES IN THE DIAGNOSIS OF TUBERCULOSIS IN INFANCY *

JEROME S. LEOPOLD, M.D.

Assistant in the Department of Pediatrics in the Post-Graduate Hospital and Medical School

NEW YORK

AND

T. ROSENSTERN, M.D.

Assistant in the Städtischen Kinderasyl in Berlin

BERLIN, GERMANY

During the past few years it has become more and more evident that tuberculosis in infancy is by no means as rare a disease as was formerly thought. The various tuberculin reactions have aided greatly in the diagnosis of tuberculosis in infancy. A positive tuberculin reaction in infancy generally means an active tuberculous focus. But before we scarify the skin of an infant, or rub an ointment into it, or inject fluid under or into its skin, there must be some sign or symptom that would lead us to suspect tuberculosis. It is a peculiarity of infancy, however, that most of the signs and symptoms are often absent.

In a typical case of tuberculosis in infancy the following symptom-complex is present: anemia, loss in weight, elevated and irregular temperature, "bronchial gland," cough, often expiratory dyspnea (Schick), general glandular enlargement (and in this respect the enlargement of the supraclavicular and anterior axillary glands are of especial diagnostic importance), the physical signs from the lesions in the lungs and the bronchial glands, a large, hard spleen, and, at times, certain abdominal symptoms and bone changes. When an infant has the above-named signs and symptoms the disease is already advanced and death is only a question of time. On the other hand, the cases of tuberculosis in infants which have but few signs or symptoms of the disease if recognized in time and placed under appropriate treatment, have some fighting chance. It is in just this group of cases, however, that the disease is often unrecognized until it has extended so far that treatment is of no avail. But that is not all, for often these patients are a source of infection to others.

In the diagnosis of those cases in which most of the signs and symptoms of tuberculosis are absent the various skin lesions which occur in tuberculosis are of great importance. Among these skin lesions must be considered first the so-called actual tuberculous lesions, namely: (1) lupus vulgaris, (2) scrofuloderma, and (3) tuberculosis verrucosa cutis. In infancy, however, these lesions are very rarely seen. More common and therefore of greater clinical significance is a second class of skin lesions, namely, the so-called tuberculides. This class of cases includes (1) lichen scrofulosorum, (2) erythema induration (Bazin), and (3) the papulosquamous and papulonecrotic tuberculides (folliclis). Various authors have ascribed various names to this group of lesions to distinguish them from the first-named class of cases, which alone were supposed to be due to the tubercle bacillus itself. Darier called them "tuberculides;" Boeck, "Exantheme der Tuberculose," and Johnston called them "cutaneous paratuberculoses."

According to earlier observers these lesions were not caused by tubercle bacilli themselves, but by their toxins. Modern researches, however, have demonstrated the presence of tubercle bacilli in all of these lesions (Leiner and Spieler, Tileston, etc.). In spite of this fact, however, the name tuberculide, suggested by Darier, became such a popular one that it is still in use by modern writers (Jadassohn).

Among these tuberculides one class plays an especially important rôle in the diagnosis of tuberculosis in infancy. This is the class of papulosquamous and papulonecrotic tuberculides. In this paper we shall confine ourselves exclusively to this form of tuberculides.

Barthelemy, in 1891, first described these papulosquamous tuberculides and Boeck first called attention to their practical importance as a diagnostic sign. Rensburg,[1] Leiner and Spieler,[2] and especially Hamburger,[3] indicated the significance of these tuberculides in infancy. Hamburger has recently published a monograph on "The Pathology and Diagnosis of Tuberculosis in Childhood," in which he again emphasizes the great value of these tuberculides as a diagnostic sign. Hamburger, in a large number of cases, first demonstrated these lesions to one of us (Leopold). In America, Tileston[4] and Shaw and Laird[5] have also called attention to the importance of these tuberculides as a diagnostic sign. A short time ago (October, 1909) Pirquet demonstrated several cases of tuberculides before the Johns Hopkins Medical Society.

For ten months we paid especial attention to these tuberculides, making use of the abundant material of the Kinderasyl in Berlin. The purpose of this paper is to show how valuable a sign this lesion really is in the diagnosis of tuberculosis in infancy, a lesion which as yet is recognized by but few observers.

Concerning the *pathology* of these tuberculides Tileston says:

> In spite of the very constant gross appearances, there is a wide range of variation in the histologic picture. The most acute type shows simply necrosis of the skin and adjacent subcutaneous tissues, entirely without inflammatory reaction of the surrounding area; there is no round-cell infiltration, no giant or epithelioid cells. In other cases there is a chronic inflammatory tissue with epithelioid, lymphoid and plasma cells, but no giant cells or tubercles. Here there is nothing to suggest tuberculosis except the presence of tubercle bacilli. And, lastly, there may be a typical tuberculous process with caseation and the formation of miliary tubercles and giant-cells.

Tubercle bacilli have been found in about 70 per cent. of the cases (Leiner and Spieler, and Tileston).

Clinically the papulosquamous and papulonecrotic tuberculides present the following characteristics: They consist of slightly raised, rounded papules which vary in size from a pin-head to a millet seed. At first they are of a red color, but later on they become brownish and show a scale or crust in the center. We can do no better than quote Hamburger's description of them, as follows:

> If one scratches away this scale or crust, there remains behind a rounded depression which generally does not bleed, but presents a dry surface. On the delicate crust one often sees a small projection which fits into the rounded depression.

* Read in the Section on Diseases of Children of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

* From the Städtischen Kinderasyl in Berlin; chief of clinic, Prof. H. Finkelstein.

1. Rensburg: Jahrb. f. Kinderh., 1904, lix, 360.
2. Leiner and Spieler: M. Pfaundler and Schlossman's Handbuch der Kinderheilkunde.
3. Hamburger: München. med. Wchnschr, 1908, No. 3.
4. Tileston, W.: Disseminated Miliary Tuberculosis of Skin, An Important Sign in General Miliary Tuberculosis of Infancy, Arch. Int. Med., 1909, iv, 21.
5. Shaw and Laird: Arch. Pediat., July, 1909.

Often we see the efflorescence without a crust, because the crust has already fallen off. . . The most characteristic points of these tuberculides are the absence of any tendency to ulceration, their central depression, their livid, brownish color, and their glistening appearance when the skin is stretched.

As to the *localization* of these tuberculides, they may appear on any part of the skin, but the seats of selection are the arms, the lower part of the back, and especially the extensor surface of the lower extremities.

According to our experience there are rarely very many tuberculides present in one case. Sometimes not more than four or five have been noticed, and at times even less than this number of lesions.

In regard to the *recognition* of these tuberculides we would call attention to a fact which Hamburger has pointed out, namely, that these skin lesions are so very small that they are easily overlooked. Time and time again we could convince ourselves that observers who knew about these tuberculides from description alone, and had never seen them, were unable to find them after a careful search, although they were present. Only after we had demonstrated the lesions to them were they able to discover the tuberculides. After having once been seen, these lesions can be easily recognized in subsequent cases.

The following shows the *frequency* of these tuberculides: In a period of ten months we saw thirty cases of tuberculosis in infancy in the Kinderasyl. Among these thirty cases we were able to demonstrate tuberculides twelve times, that is, in about 40 per cent. of the cases. It goes without saying that this high percentage will not be attained in dispensary material, for these tuberculides often lose their characteristic appearance in a few days, and the cases must, therefore, be under constant observation.

It may be well to mention that we have examined many hundreds of infants free from tuberculosis, some of whom presented other skin lesions, but we were never able to find any tuberculides among them. Whenever we found these tuberculides in cases which in other respects showed no signs of tuberculosis the tuberculin reaction and further observation of the case revealed the specific nature of these tuberculides.

Our cases of tuberculosis may be divided into three groups: the first embraces those cases in which the tuberculides were only one of the signs of a typical case of advanced tuberculosis; the second group is composed of those cases in which the history of the case or some one symptom caused us to suspect tuberculosis, and in which our diagnosis was confirmed by the presence of tuberculides; the third group consists of those cases which showed no signs or symptoms of tuberculosis, and in which only the presence of tuberculides indicated that tuberculosis was present.

REPORT OF CASES

FIRST CLASS—TUBERCULOSIS WITH TUBERCULIDES.

CASE 1.—A typical case was that of M. B., an infant, aged 7 months. Two other children had died of meningitis. Mother was ill in hospital with pneumonia. The child was pale, below normal in weight and had frequent attacks of coughing. Under the tip of the right mastoid was a gland the size of a bean and a left preauricular gland the size of a cherry. There was also slight general glandular enlargement. At the apex of the left lung and the base of the right lung, there was slight dulness, with a few moist râles. Dulness was present over sternum. The spleen was enlarged. On the outer side of the left leg there were two typical tuberculides the size of a pin-head, of a brownish glistening color with central depression. (These tuberculides were just perceptible to the touch.) On the right cheek there were also two tuberculides. The Pirquet reaction was markedly positive. There was irregular fever and increasing weakness until death took place, seven weeks after admission to the hospital.

Autopsy.—This showed caseating tuberculous bronchial lymph-nodes; caseous mesenteric glands; tuberculous and cheesy pneumonia of the right lung, with beginning softening in the middle lobe.

CASE 2.—The patient, A. M., was an infant 13 months old, born Feb. 29, 1908, whose history was unknown. The weight was 5,500 gm. (12 pounds). The temperature ranged between 37.4 C. (99 F.) and 39 C. (102 F.). There was general glandular enlargement, spina ventosa and diffuse bronchitis, with dulness, bronchial breathing and fine râles over the left lower lobe. The spleen was enlarged. On the inner surface of the right lower leg there were a few pale red characteristic tuberculides. The Pirquet reaction was markedly positive. The patient died twenty days after admission.

Autopsy.—This showed caseous tuberculosis of the bronchial and mesenteric glands; tuberculous periostitis of the skull; caseous pneumonia of the left lower lobe.

CASE 3.—The patient, P. E., aged 4 months, was an anemic infant with general glandular enlargement. The temperature varied between 37 and 39.5 C. (98.6 and 103.1 F.) There was a typical bronchial gland cough and a hard splenic tumor, dulness over the left lower lobe, bronchial breathing and fine râles. Tuberculides in all stages were scattered over body, in greatest number on the lower extremities.

Autopsy.—Acute miliary tuberculosis.

CASE 4.—The patient, O. R., aged 9 months, is an infant whose history is unknown. The patient weighs 6,100 gm. (13 2/5 pounds). The temperature ranges from 37 C. to 38 C. (98.6 F. to 100.4 F.). Examination showed general glandular enlargement, lingua geographica, chronic conjunctivitis, keratitis, spina ventosa and diffuse bronchitis. Scrofuloderma was present on all four extremities and four typical tuberculides on the lower limbs. Pirquet reaction was positive and marked. The child is still in hospital under treatment.

SECOND CLASS—HISTORY OR SOME ONE SYMPTOM AROUSING SUSPICION OF TUBERCULOSIS

CASE 5.—E. T., an infant aged 10 months, entered the hospital June 3, 1909. The child's mother died of tuberculosis. The patient is a well-developed, healthy-looking child, with fresh, rosy color and good turgor. There are no signs or symptoms of disease, but on the left leg there are twelve tuberculides the size of a pin's head of pale, brownish color, some of which have a central depression. Pirquet reaction is markedly positive. The child is still in hospital under treatment.

CASE 6.—A. R., an infant, aged 11 months, whose history is unknown, is an anemic child, 6,300 gm. (13 4/5 pounds) in weight, with general glandular enlargement. Physical examination was negative except for the skin lesions. On the buttocks were many tuberculides in different stages of development. The smallest were the size of a pin-head, brown, slightly raised, with a small central depression. Near these were larger tuberculides about the size of a millet seed, some red, some brown, slightly elevated with a central depression. Pirquet reaction was positive and pronounced. Under observation the child's general condition gradually became worse; loss of weight, fever, vomiting and cough developed. After a few weeks the tuberculides had in part faded away.

Autopsy.—This showed caseous tuberculosis of the tracheal, bronchial and mesenteric glands; caseous pneumonia of the right lower lobe containing a small cavity the size of a cherry.

CASE 7.—The patient, E. D., was an infant, aged 9 months. The mother and one other child died of tuberculosis. The child weighed 5,100 gm. (11 1/5 pounds). With the exception of a slight enlargement of the cervical and inguinal glands no abnormal condition was found in the skin. On the face and back and on the extremities there are tuberculides, consisting of slightly raised papules, the size of a pin-head, of brownish

color, glistening and with central depressions. Pirquet reaction was strongly positive. The child is still in the hospital.

CASE 8.—K. G., an infant aged 5 months, whose history is unknown, was sent to hospital because of bronchitis. The patient is a poorly nourished, pale, undeveloped child. The child's temperature ranges from 37 C. to 39 C. (98.6 F. to 102.2 F.). The day after admission dulness was found over right lower lobe. Dyspeptic stools and vomiting were present. A diagnosis of gastro-enteritis and broncho-pneumonia was made. On the third day of the child's stay in the hospital two typical tuberculides were found on the back. Pirquet reaction was strongly positive. Child still under treatment in hospital.

THIRD CLASS — NO SIGNS OR SYMPTOMS OF TUBERCULOSIS EXCEPT THE TUBERCULIDES

CASE 9.—B. L., an infant, aged 3 months, was brought into the hospital by the mother, because it had frequent stools and had lost weight somewhat. Examinations showed a rather well-developed child with negative findings in every respect, except for the skin. Three typical tuberculides were found on the right leg. Pirquet reaction was markedly positive. The child was removed from hospital after a few days. Further course of disease is unknown, but the positive Pirquet reaction in a child of 3 months makes a positive diagnosis of tuberculosis.

CASE 10.—E. S., a child, aged 2½, showed bilateral otitis media. The patient's temperature ranged between 37 and 39.2 C. (98.6 F. to 102.4 F.). There were no signs or symptoms of tuberculosis. On the fifth day after admission examination showed a few brownish-red umbilicated papules, pin-head-sized, on buttocks and arms. Pirquet reaction was positive. The child was sent to the country.

CASE 11.—The patient, I. L., was an infant aged 3 weeks. The parents were healthy. The child was breast-fed for three weeks, and was then brought into the hospital. It weighed 2,000 gm. (4 2/5 pounds). It was placed on "allaitement mixte" and made very good progress. After two and a half months the child weighed 3,900 gm. (8 3/5 pounds). On admission there was a grayish discoloration of the skin, which, with a distinct saddle nose, a chronic coryza and an enlarged spleen, made us suspect syphilis. But there was no skin lesion. The Wassermann reaction was negative. Only after repeated examinations were there at last discovered on the lower extremities numerous flat papules, of pin-head size and with central depressions. These papules were light-brown in color and brightly glistening. A Pirquet reaction was then made. It was markedly positive. After a few days expiratory dyspnea developed, and later, a bronchopneumonia, with loss of weight and irregular fever. The child is still under observation.

CASE 12.—F. Z., an infant, aged 2 months, whose history is unknown, was an underdeveloped child, with yellowish, waxy color. There were two distinct axillary glands, a hard liver and spleen, but physical examination was otherwise negative. The temperature ranged from 37.8 C. to 39.2 C. (100 F. to 102 F.). Syphilis or tuberculosis was suspected. Pirquet reaction and *Stich* reaction were negative. The child was not cachectic and a provisional diagnosis of syphilis was made. A Wassermann reaction gave doubtful result. A few days later three typical tuberculides were found on the left lower extremity and the diagnosis of tuberculosis was made. The Wassermann reaction was again made with a negative result. The child gradually grew worse. Dulness developed in the right upper lobe. Death followed about 4 weeks later.

Autopsy.—This showed caseous tuberculosis of the bronchial and mesenteric glands, caseous pneumonia of right upper lobe with a cavity the size of a hazel-nut, with no signs of syphilis.

CONCLUSIONS

1. Papulosquamous and papulonecrotic tuberculides are present in a large percentage (40 per cent. in our series) of cases of tuberculosis in infancy.

2. At times the tuberculides are the only evidences of tuberculosis that are present.

3. The tuberculides are, therefore, of great diagnostic value in tuberculosis in infancy.

701 Madison Avenue.

ABSTRACT OF DISCUSSION

DR. F. C. NEFF, Kansas City, Mo.: I had the pleasure of seeing a few of these cases with Dr. Leopold in Berlin and since then I have hoped to demonstrate some of these lesions on tuberculous children, but have not been successful. The cases are extremely interesting from the diagnostic standpoint and explain the positive Pirquet reaction we get in some children in whom an active tuberculous lesion is not demonstrable.

DR. FRANK GENGENBACH, Denver: I have had the same experience as Dr. Neff. I saw a number of these lesions in Berlin and Vienna. One must have them pointed out to him before he can appreciate their significance. Whether they are limited to the Germans and Austrians I cannot say. I have found but few in this country; but in the cases where they are present we can get the Pirquet reaction.

DR. WALTER D. HOSKINS, Indianapolis: How early may this observation be made in relation to fever, or demonstrable signs in the glands or lungs?

DR. WILLIAM J. BUTLER, Chicago: The question of the diagnosis of tuberculosis is getting to be quite a common topic and we are constantly seeking for some new sign or method of diagnosis. I saw cases presenting what were termed tuberculides about four years ago. I hardly think it can be looked on as of importance as a rule in so far as the early diagnosis of tuberculosis is concerned, as there are so many other points of importance in the diagnosis of tuberculosis that we can hardly lean on it with any confidence, for we see lesions similar, to all appearances, in children not affected with tuberculosis. They cannot be differentiated at all from the small papulo-pustules we often see in children. As to the Pirquet reaction, I think there is nothing that is more misunderstood to-day than the tuberculin reaction, especially the Pirquet reaction. I do not think any one looks upon the Pirquet reaction as a decisive aid in the diagnosis of tuberculosis in children beyond the second year. A positive Pirquet does not mean an active tuberculosis unless it is within the first two years of life, and even at that time it is not an absolutely positive differential aid.

DR. C. F. WAHRER, Fort Madison, Ia: Are those early diagnostic signs of tuberculosis in infancy or are they later signs?

DR. JEROME S. LEOPOLD, New York: As to the frequency of these tuberculides, Pollak, of Vienna, has recently reported about one hundred cases of tuberculosis in infancy from Hamberger's clinic. He found that the vast majority of these patients first showed symptoms referable to the bronchial glands or the lung, but in a very large number of cases he could find no symptoms or signs except these tuberculides. I have been on the lookout for this lesion in this country for six months and have seen but one case. In regard to Dr. Butler's statement, I would say that these papulo-necrotic tuberculides are specific. If you find a tuberculide in an infant you can be absolutely sure that there is some focus of tuberculosis in that infant. A positive Pirquet reaction in infancy almost invariably means an active tuberculosis. The tuberculide begins as a small papule, it is at first reddish in color. This redness lasts for a few days or a week or so. Sometimes there is a small vesicle on this papule that breaks down and leaves a central depression. Gradually the redness disappears and a typical tuberculide appears. This consists of a very small flat papule with a central depression. It is of a brownish color and glistens when the skin is stretched. These tuberculides usually appear on the lower extremity. The number of tuberculides is very small; often only one will appear. The largest number I have seen in one case was twelve. There is very slight induration. The duration varies from several days to a few weeks. That is why, if you observe these cases in dispensary practice only, you might not see the tuberculides, while if you have the case in the hospital under constant observation you will be more likely to observe them.

THYROID SECRETION AS A FACTOR IN ADRENAL ACTIVITY

R. G. HOSKINS, PH.D.
Professor of Physiology, Starling-Ohio Medical College
COLUMBUS, O.

For some time the idea has been growing that the activity of the adrenals is materially influenced by thyroid conditions. Various clinical writers have endeavored to explain obscure symptom-complexes on this assumption, but until recently there has been no clear-cut evidence supporting the idea. Within the last two years, however, the theory has received some support from the work of several German investigators. At present, the weight of the existing evidence, although it is not entirely concordant, is in favor of the theory that the thyroids stimulate the adrenals.

During the last year and a half I have made several series of studies in the physiologic laboratories of the Harvard Medical School in an attempt to throw some further light on the relationships among the thyroids and other endosecretory organs. Although these studies are as yet for the most part incomplete, sufficient progress has been made to justify a preliminary report of that part of the work bearing on the subject of this paper. The studies are purely morphologic in character; they are based on the supposition that increased or decreased activity of any organs in plastic, rapidly growing animals causes a corresponding hyperplasia or hypoplasia. The effects both of hyperthyroidism and hypothyroidism were tried in young and in fetal animals. The guinea-pig was used in practically all the experiments.

In each case the animals before autopsy were lightly etherized, and, in order to eliminate variability in gland weights due to differing blood content, were bled to death from the aorta. The organs under consideration were then carefully dissected out and weighed on a quick-acting balance. They were usually fixed for histologic study. With care in the manipulations it was found possible, as was shown by subsequent microscopic study, to reduce to negligible proportions the percentage of error due to the presence of extraneous tissue. The gland weights have all been expressed as percentages of the body weights.

CONGENITAL HYPERTHYROIDISM

The results obtained in the experiments on congenital thyroidism have recently been reported in detail in the American Journal of Physiology.[1]

It is as yet largely unknown to what extent conditions in the mother produce demonstrable results in the organs of her offspring. Halsted,[2] and, later, Edmunds[3] and Hunt[4] have noted in the offspring of thyroidectomized animals a hypertrophy of the thyroids. Ceni[5] has also noted that chicks hatched from the eggs of thyroidectomized hens usually show anomalies of development. In my experiments twenty-eight guinea-pigs were fed commercial desiccated thyroid in various doses and for various lengths of time. This led in most instances to death or abortion. There were obtained, however, twenty-one offspring from mothers that had ingested from 0.13 to 2.50 gm. of the drug. The weights of their adrenals at birth were compared with the average of twenty glands from normal animals. There was found a depression in weight roughly corresponding with the dosage. In case of the litter the mother of which had received the greatest dosage, the average weight of the adrenals was 0.014 per cent. of body weight, whereas the normal average was 0.030 per cent. The depression amounted to 53 per cent. No difference was detected histologically between the normal and the experimental glands, either in pigmentation, number of mitoses or proportions between cortex and medulla. The depression noted was interpreted as a reaction in the adrenals of the offspring to epinephrinemia caused by thyroidism in the mother.

1. Hoskins: Am. Jour. Physiol., 1910, xxvi, 426.
2. Halsted: Johns Hopkins Hosp. Rep., 1896, i, 373.
3. Edmunds: Lancet, London, 1901, i, 1451.
4. Hunt, Reid: The Relation of Iodin to the Thyroid Gland, THE JOURNAL A. M. A., Oct. 19, 1907, p. 1323.
5. Ceni: Arch. ital. d. biol., 1905, xlii, 420.

CONGENITAL HYPOTHYROIDISM

In a second series there were obtained eighteen offspring from six mothers that had been thyroidectomized before conception. The adrenal weights at birth (expressed as percentages of the body weights) were 0.023, 0.035, 0.042, 0.036, 0.028, 0.046, 0.060, 0.024, 0.036, 0.042, 0.035, 0.031, 0.037, 0.048, 0.035, 0.035, 0.027, 0.030; average, 0.036. The normal average as previously mentioned was 0.030. There was, therefore, in the experimental series, an average hyperplasia of 20 per cent. This result is particularly significant because the guinea-pig is largely immune to the effects of thyroidectomy.

A few supplementary experiments were made on dogs, but in only one case was a litter secured. The mother had been deprived of about three-fourths of her thyroid tissue. The adrenal weights were 0.028 and 0.020, respectively, while the average weight of those of five normal animals of the same size was 0.017. In these two cases, therefore, there was an average hyperplasia of 40 per cent. Incidentally, Halsted's observation of thyroid hyperplasia in similar cases was confirmed.

These results are in harmony with those of the preceding series. The adrenal hyperplasia observed is probably to be similarly explained as a reaction to adrenal deficiency caused by hypothyroidism in the mother. It is hoped later to extend this series in animals more favorable than the guinea-pig to such studies, and to make a histologic study of the organs affected.

DIRECT HYPERTHYROIDISM

In correlation with the congenital series studies were made of the effects of hyperthyroidism and hypothyroidism in young guinea-pigs directly. In this animal the young at birth are sufficiently advanced in development to permit of their use at once for experimental purposes. This is an advantage, because their growth at this period is rapid and any morphologic effect of the experiment may be expected to appear within a short time. The experiments were begun on the day of birth and continued fifteen days. During this period the animals increased in weight about 50 per cent. In the "hyperthyroidism" series eighteen animals were fed desiccated gland, beginning with approximately 5 mg. and increasing to from 10 to 15 mg. a day at the end. The attempt at first was made to keep controls from the same litters, but this proved impracticable because the rate of growth in different members of a family was so variable that the gland weights at the end of the period were not comparable. Each experimental animal, therefore, was "paired" with the one of a normal series of twenty-seven that most nearly corresponded with it in weight and rate of growth. Two pairs were of different sex and in four cases, the sex of either the normal or the experimental animal had not been recorded. In the other twelve pairs

the sex was the same. In two cases in which comparable controls were lacking, the same one was used twice and in another instance one was used three times. The accompanying table shows the results obtained.

WEIGHTS OF ADRENAL GLANDS OF YOUNG GUINEA-PIGS AFTER FIFTEEN DAYS' THYROID FEEDING, COMPARED WITH NORMALS *

Weights of animals.		Weights of adrenals.	
Experimental.	Normal.	Experimental.	Normal.
113	114	.065	.051
102	96	.072	.057
109	107	.067	.047
117	114	.058	.051
97	95	.048	.042
109	105	.082	.061
133	133	.041	.042
140	145	.057	.041
108	102	.094	.067
75	82	.060	.038
137	130	.052	.046
120	123	.063	.043
135	130	.059	.046
125	130	.061	.046
166	177	.049	.045
176	165	.046	.040
131	133	.052	.042
196	197	.047	.043
Av.....127	127	.059	.047

* Gland weights expressed as percentages of body weights

There was an average hypertrophy in the adrenals in this series of about 25 per cent. In one case only was the normal gland as large as the experimental. These results add considerable plausibility to the explanation proposed for the adrenal depression noted in the "congenital thyroidism" series. It is intended later to report this series also in greater detail, including histologic studies of the adrenals and other organs affected.

HYPOTHYROIDISM

A preliminary series of 11 thyroidectomies was made on new-born guinea-pigs. So far as could be determined, however, from such a small series, the operation had not at the end of fifteen days resulted in any effect on the adrenals. In view of the fact that in this animal the operation has in other respects so little effect, such a result was rather to be expected. It is hoped later to continue the experiments in more suitable animals.

The results of the experiments as a whole add some support to the theory that the thyroids normally stimulate the adrenals. The "congenital" experiments are of themselves inconclusive. They might be explained on two suppositions—either that the results noted were direct effects of the experimental procedures in the fetal organisms, *e. g.*, that hyperthyroidism depressed the adrenals or, that the effects were, as supposed, secondary reactions to effects in the homologous maternal organs. The two suppositions lead to diametrically opposed conclusions. But from the feeding experiments in the young animals themselves, there seems to be no escape from the conclusion that hyperthyroidism stimulated the adrenals to hyperplasia. It is probable, but does not necessarily follow, that, within physiologic limits, thyroid secretion would have a similar stimulating effect. It has been shown by Bernard and Bigart[6] and others that various toxins cause adrenal hypertrophy, and the results secured from thyroid feeding might be due merely to the toxic effects of the drug. The toxins might be either the drug itself or endotoxins due to perverted metabolisms. This supposition is opposed, however, by the results of the congenital hypothyroidism experiments, for which no corresponding explanation can be offered.

My thanks are due to Prof. Walter B. Cannon for numerous helpful criticisms during the course of this work.

6. Bernard and Bigart: Jour. de physiol. et de path. gén., 1902, iv, 1014.

SUSPENDED RESPIRATION DURING OPERATION

JERE L. CROOK, A.M., M.D.
JACKSON, TENN.

The patient, a negro boy, aged 19, while walking over a trestle near Ripley, Tenn., fell about 30 feet, striking the back of his head on an iron drawhead. A temporary dressing, which checked the hemorrhage from the scalp, was applied by a neighboring physician, and the boy was brought to my sanatorium in Jackson fifty-four hours after the occurrence of the accident.

The patient was delirious and semiconscious on arrival. Operation was begun shortly afterward under ether anesthesia. After thorough exposure of the occipital region of the skull, an extensive depressed fracture was revealed, involving portions of the parietal and occipital bones. A trephine opening was quickly made and elevation of the depressed area was accomplished with difficulty, the ether cone meanwhile having been laid aside. Just as the last portion of the depressed bone was pried up, the patient's breathing stopped instantly. His tongue was seized with forceps, jaws elevated and chest depressed with no effect. Then in the face of apparent death, Sylvester's method of artificial respiration, with head lowered, was methodically and carefully practiced for seven minutes, the boy's father and brother, who were standing near, having given him up for dead. Our perseverance was finally rewarded by a gradual resumption of voluntary respiratory efforts. The operation was completed without anesthesia, physiologic saline solution being given per rectum and continued afterward. The patient reacted very slowly, but made an uneventful recovery.

At this date, seventeen days after the operation, he is in full possession of his faculties. The wound is healing slowly by granulation, as it was infected before operation. It is being dressed every other day.

THE DIAGNOSIS OF ULCER OF THE STOMACH AND DUODENUM BY THE ROENTGEN RAY

HARRY ADLER, M.D.
BALTIMORE

The recognition of ulcer of the stomach and duodenum is always so important and the diagnosis at times so difficult that any method must be welcomed which promises aid in those atypical cases where the absence of the cardinal symptoms permits only of a suspicion or, at most, of a presumption. The finding of blood in the stool, either visible or occult, has proved of great importance and constitutes a decided step in the forward direction; but when we remember that not infrequently in chronic ulcer even occult blood is absent for weeks at a time, this important means of diagnosis is often unavailable. Also, Murdock's orthoform test, being based on subjective symptoms, is usually untrustworthy. It is not my purpose to enter into the general subject of diagnosis of ulcer, but simply to call attention to the valuable aid the *x*-ray examination has furnished in a number of cases; some of otherwise uncertain diagnosis.

I have found little in the literature to guide me. The first idea was given me by Dr. Hemmeter in 1906 before the American Gastro-Enterological Association. He spoke of the diagnosis of gastric ulcer by means of the

x-ray, and referred to successful results in cases of artificial ulcer produced experimentally in dogs and cats. The fluoroscope was used mainly: at least no plates were exhibited at that time. Dr. Hemmeter states that the bismuth shadows he obtained were not sharply circumscribed and that the shadows produced by the ribs and spinal column might interfere with that of the ulcer. Matthes of Cologne, in his recent monograph on ulcer of the stomach, states that he has been at pains to localize the ulcer in undoubted cases as proved by hematemesis. Out of numerous attempts he was successful in but two cases. He gave bismuth by mouth for several days and then discontinued it for two days, after which the patient was radiographed. His method was based on the idea that a firm crust of bismuth was formed in the ulcer which should persist for several days after the bismuth was withheld. Had this idea been correct, he would have succeeded more frequently, for bismuth does not fail to give a dense shadow with the use of a good *x*-ray machine.

My method is to give a single dose of one and a half drams of bismuth subcarbonate in half a glass of water and wait a time sufficient for the stomach to get rid of it, having determined in advance the motility. In none of my cases was there any marked disturbance of the motor function. The picture was taken four to six hours after the bismuth, which was given on an empty stomach. This allows ample time for all bismuth to disappear from the stomach and duodenum except such as may be deposited in the crater of an ulcer. Numbers of observations were made in cases of normal stomachs and in cases of gastroptosis with intact gastric mucous membrane, and in every case the bismuth was found, on *x*-ray examination, to have left the stomach completely within four hours of giving it. Care should be taken, however, that the stomach is empty when the bismuth is taken. It is not improbable that the negative results obtained have been due to allowing too much time to elapse before the *x*-ray exposure and possibly to inferior apparatus. We have not found that the spinal column or ribs interfered with the demonstration, the bismuth shadow being denser than that of bone. Some training is necessary to interpret the plates properly. They frequently represent to the physician but vague shadows until delineated by the trained observer.

After this first *x*-ray examination one ounce of the bismuth subcarbonate is given in a glass of water and a second picture taken immediately thereafter. The bismuth rapidly spreads itself over the gastric mucosa. This can probably be facilitated by having the patient turn from side to side several times. This examination has for its purpose the obtaining of a shadow of the entire stomach, so that any shadow obtained in the first plate can be localized with reference to its relation to the stomach.

The use of the subnitrate of bismuth in large doses has recently been productive of considerable discussion. That its use in large amounts is not a matter of indifference was according to Hupert, first shown by Hildebrant, who reported two cases of bismuth poisoning following colon injections in children. Benneke and Hoffman observed in a three-weeks-old infant cyanosis, collapse, and death occurring within fifteen hours after giving 3 to 4 gm. of bismuth in buttermilk. Meyer reported a fatal case of bismuth poisoning in an adult three hours after taking 50 gm. of the subnitrate. These cases showed a marked methemoglobinemia. A large number of less serious cases have been published. In some the poisoning was attributed to a change from the nitrate to the nitrite of bismuth. Methemoglobinemia was noted in practically all cases, and it is very doubtful whether we have to deal here with a true nitrite poisoning in the sense of a sodium nitrite or nitroglycerin intoxication; but rather that the nitrite of bismuth is more soluble and more readily absorbed than the subnitrate; and that there occurs a true metallic poisoning similar to that of lead or antimony, metallic bismuth having been found in the internal organs and in the gums. Sufficient is now known to make one hesitate in giving large doses, such as an ounce or two of the subnitrate. I have been using the subcarbonate in large doses and have had no untoward results. In most of my cases no effort was made to get rid of it after the *x*-ray exposure. Other metallic substances have been recommended, notably the red oxid of iron by Taegle, and the magnetic oxid of iron by Lewin. Hemmeter has had some experience with calcium salts. Where there is a probability of stenosis of the stomach or marked ulceration of the alimentary tract, means should be taken to remove the bismuth after it has served its purpose.

I have the following cases to report briefly in connection with the plates, which were taken by Dr. Ashbury, radiographer to the Hebrew University Hospitals.

CASE 1.—S. W., male, aged 52, merchant, had syphilis at 18; previous history otherwise unimportant. The patient had suffered three to four years intermittently with pain in upper abdomen, localized about midway between xiphoid cartilage and umbilicus. Pain came on irregularly, apparently independently of food; caused nausea at times but no vomiting. The patient belched considerably and had waterbrash, heartburn and constipation. He was well nourished but rather pale. Physical examination was negative except for tenderness over the seat of maximum pain. The stomach area was normal. Free hydrochloric acid was 48; total acidity 76. The patient had been treated for several years for hyperacidity with indifferent result. The *x*-ray examination showed a definite shadow about the size of a dime in the pyloric region of the stomach. The patient was cured by six weeks' ulcer treatment: he has had no symptoms since treatment was discontinued, over one year ago.

CASE 2.—A. A., aged 40, was a cigarmaker; previous history unimportant. His chief complaint was pain in the stomach. He was accustomed to drink beer and whisky immoderately. He denied lues. His trouble, for which he was treated in a hospital in Russia with partial relief, began one year ago. Three weeks before entering Hebrew Hospital the pains became more severe and caused vomiting on one occasion. The patient was rather poorly nourished and frail; had marked aortic insufficiency; pain and tenderness immediately below the ensiform cartilage. On the fifth day in the hospital he had a profuse hemorrhage from the bowel accompanied by severe pain in epigastrium. These hemorrhages persisted for three days and the patient's condition became so precarious that transfusion was carried out with the happiest results. Several days later an *x*-ray plate showed a bismuth shadow near the pylorus about the size of a quarter dollar. The intestinal hemorrhages without hematemesis had caused me to think the case one of duodenal ulcer until the *x*-ray examination was made.

CASE 3.—J. F., aged 40, tailor, whose habits were good (no syphilis) and early history unimportant, had been troubled for seven years with spitting of blood. He suffered with anorexia, bad taste in mouth, belching of gas with rising of sour fluid in mouth; felt better after eating, but one hour later had a sense of oppression in the stomach region with above symptoms. He had attacks of diarrhea with fever. Occult blood was present on many occasions. Physical examination was quite negative. There was only diffuse and slight tenderness in upper abdomen. When the tube was introduced into the stomach, blood was ob-

tained. *X*-ray examination showed a small irregular bismuth shadow in pyloric region of stomach.

CASE 4.—Z. K., aged 43, merchant, had had diffuse pains in the abdomen for about nine years. The present trouble dated from an acute attack of intestinal trouble following the eating of corn. The patient suffered with pain in lower abdomen coming on about three hours after eating, radiating at times upward to the chest, at other times to the scrotum, and relieved by taking food. His appetite was good, he had no nausea, vomiting, belching or heartburn. The bowels were regular. On repeated examinations, no occult blood was found. The patient was well built and well nourished; had a florid complexion. The physical examination was absolutely negative. There was no abdominal tenderness. Free hydrochloric acid was 36, total acidity 68. The patient was treated for nervous indigestion with but temporary relief. He was suddenly seized with faintness while at stool, when subsequent examinations showed melena which persisted for weeks, producing marked anemia. *X*-ray examination showed ulcer of duodenum. This was substantiated by a laparotomy when a gastro-enterostomy was performed. Bismuth shadow was later shown in duodenal loop. Subsequent to this, transfusions of blood were necessary to relieve several violent attacks of hematemesis.

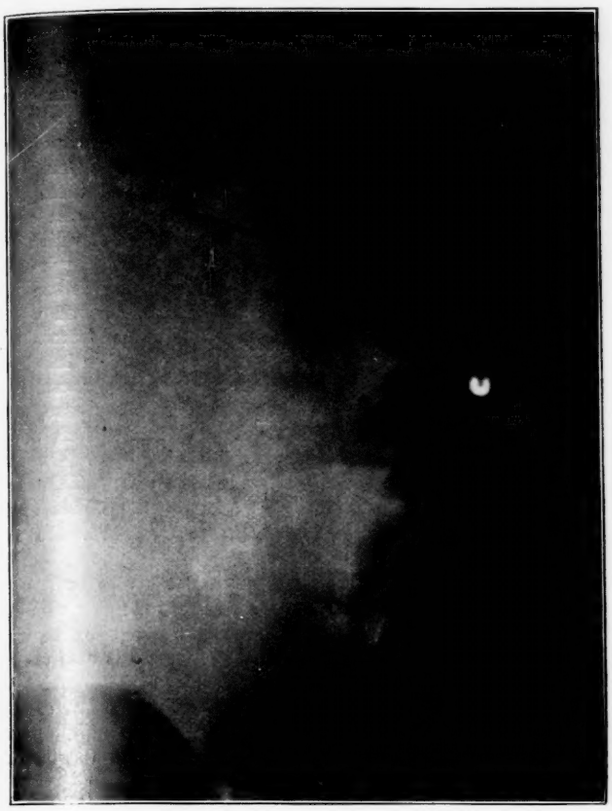


Fig. 1.—Bismuth shadow showing ulcer at pylorus (position indicated by arrow) in Case 1. Position of umbilicus indicated by light U-shaped mark.

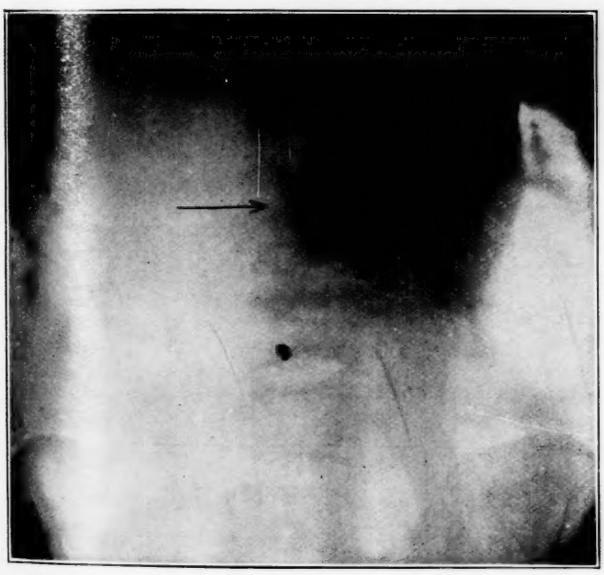


Fig. 2.—Bismuth shadow (indicated by arrow) corresponding with area of tenderness, just below ensiform cartilage (Case 2). Picture taken five hours after ingestion of bismuth. Small dark disk above to the right indicates painful area due to heart (aortic insufficiency). Position of umbilicus shown by small dark broken disk below.

Fig. 3.—Bismuth shadow of globular stomach *x*-rayed immediately after taking bismuth subcarbonate to show position of stomach so as to locate bismuth shadow with reference to stomach (Case 2).

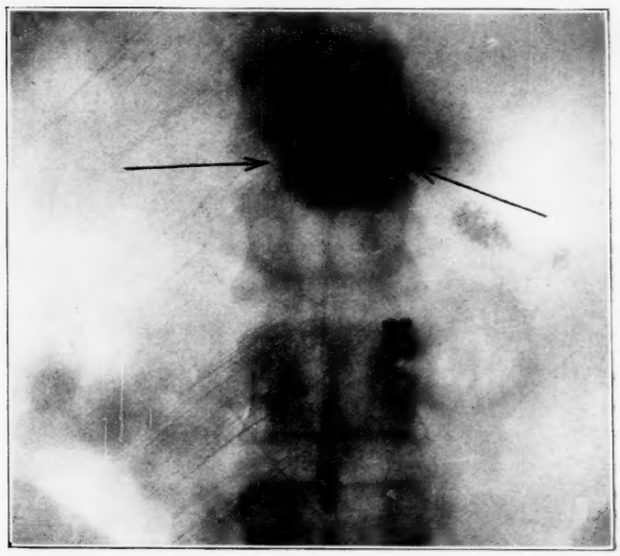


Fig. 4.—Shadow of duodenal ulcer indicated by arrows (Case 6). Note in all pictures that spine does not interfere with bismuth shadow.

CASE 5.—S. L., aged 36, merchant, with good habits, had had pains in the epigastrium for three years. Attacks of pain in the epigastrium, which made him feel faint, came on daily about four hours after meals, and were relieved by taking food. Belching and heartburn, but no nausea or vomiting, were present. The bowels were constipated; no occult blood was found. The patient was well nourished, and had a florid complexion. Physical examination was negative except for a slight tenderness in epigastrium. The stomach was normal in size and position. Free hydrochloric acid was 38, total acidity 68. *X*-ray examination showed ulcer of the duodenum. Symptoms

disappeared completely after the patient had been for six weeks under treatment for ulcer. Occult blood was present several times during the first weeks of the treatment.

CASE 6.—H. H., aged 39, merchant, had had for five years a pain in the upper left abdomen, which came on three to four hours after meals, never at night. The patient usually felt well during the winter months. The trouble seemed to begin in spring and was worse in summer. Nausea, vomiting, belching and rising of sour fluid in the throat were present at times; no vomiting of blood. Bowels were constipated.

Figs. 10 and 11.—The steel skeleton of the building as it appeared after the first few beams were erected. The small picture shows another view of the electric crane which handled the heavy beams; as each one was swung into place it was temporarily secured by bolts and nuts. These were later replaced by rivets placed while hot and securely riveted by compressed-air machines.

No occult blood was found. The patient had lost fifteen pounds in the past month; he was frail and undernourished. There was tenderness in the epigastrium. Free hydrochloric acid 48, total acidity 80. *X*-ray examination showed ulcer of the duodenum. Bismuth shadow corresponded to location of tenderness.

Of these six cases, three were undoubted cases of ulcer clinically, and a fourth case was proved by operation. In two the diagnosis could be but presumptive without the *x*-ray examination. While the number of cases presented is small the results are, to my mind, of so definite and distinctive a nature as to lead me to believe that we have in radioscopy an extremely valuable aid to the diagnosis of gastric and duodenal ulcer, second in importance, probably, only to hematemesis or melena. Three of the patients were radiographed again, after carrying out the ulcer treatment. In two of them the ulcer shadow had disappeared; in one, it persisted. This agreed with the clinical findings. It is not unlikely that this method may also be used as an index of the result of treatment.

This is but in the nature of a preliminary report. Further observations will be made which, it is hoped, will substantiate the above.

1804 Madison Avenue.

Special Article

THE HOME OF THE ASSOCIATION

A BRIEF HISTORY OF MATERIAL PROGRESS AND OF THE GROWTH OF THE ASSOCIATION BUILDING

CHAPTER III. THE STRUCTURE OF THE NEW BUILDING

The new building is supported entirely by the steel columns of the framework: the brick walls have no part in the support. There are twenty-four of these columns, each resting on a foundation of concrete and steel, and these foundations, or column footings, rest on the piles, nearly four hundred of which were used. Sixteen piles were required for each footing. After being driven they were sawed off square, covered with a platform of steel I-beams, frames built up and slush concrete thrown in. These concrete footings are pyramidal in shape, 10 feet square at the base, which rests on the piles, and 4 feet at the top, and are 5½ feet deep. On these the steel columns rest. This brief description gives but little idea of the solid substructure on which the steel columns rest.

A concrete wall was also built under the rear end of the building and a curb or retaining wall at the curb line under the sidewalk. These walls and the column footings required 30,000 cubic feet of concrete. About 800 tons of steel columns and heavy beams and girders make up the framework of the building.

FLOORS, ROOF AND WALLS

The floors and roof are made of 12-inch porous hollow tile arches of end

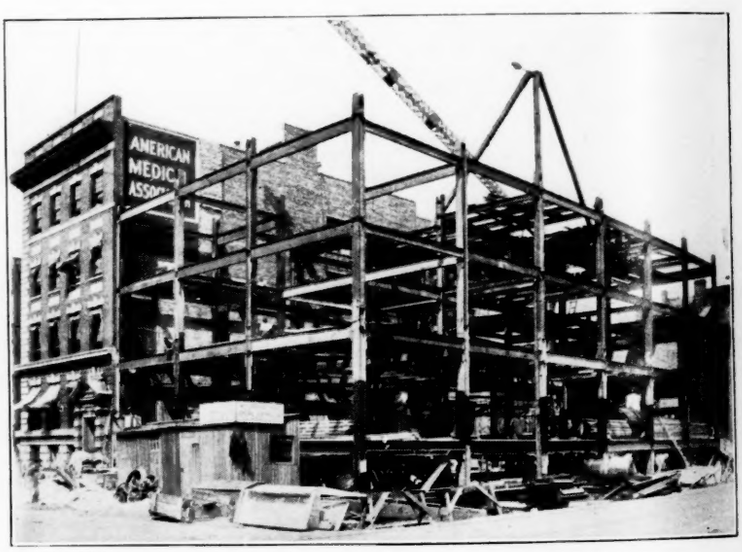


Fig. 12.—The steel work of the first three stories above ground.

construction with skew-backs and keys. The partitions and vaults throughout are of the same material, 4 inches thick and plastered on both sides. The steel columns are also given additional protection throughout the building by being covered with brick or tile and plaster.

The outer walls are of 3-inch red paving brick laid in red mortar, about 60,000 brick being required. The lining walls

are of common brick and 600,000 of these were used. The main door frame is of steel with an ornamental grill above and the facing is of ornamental red terra cotta, with a tablet bearing the legend, "THE AMERICAN MEDICAL ASSOCIATION." The window ledges are also of red terra cotta and a band of terra cotta runs across the front and side of the building, beneath the windows. The upper cornice is also of terra cotta. The walls extend for a distance of 8 feet above the upper cornice and are capped with a coping of the same material.

Each window is 5 by 7 feet in dimension, with two sash, glazed with heavy polished plate glass, providing an abundance of light on every floor. Thus the building is splendidly lighted.

Although the building is strictly fire-proof, a fire escape is required by city ordinance for use in case of smoke or explosion or panic; so on the Indiana Street front a complete stairway and platform fire-escape has been built, with a ladder from the top platform to the roof, and a counter-balanced terminal section at the bottom which will connect the second story and the sidewalk on demand.

In a succeeding issue we shall take up further details concerning the building.

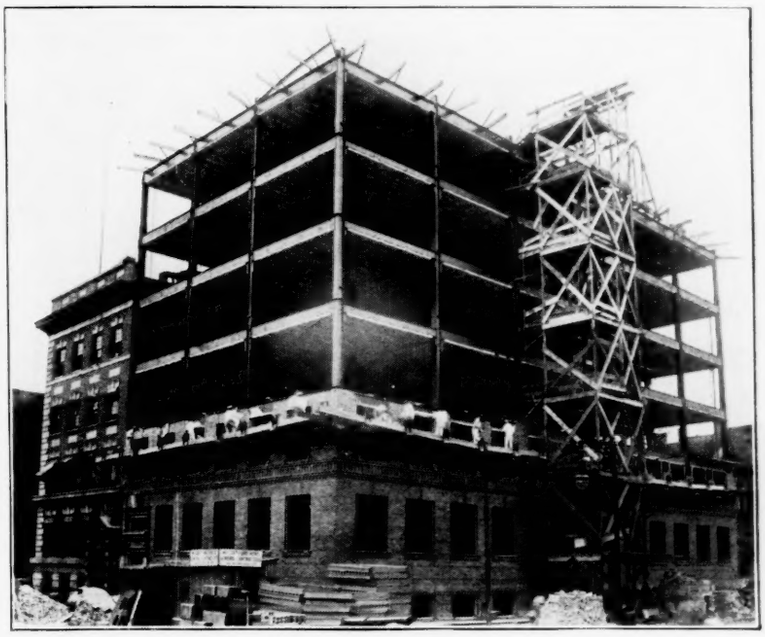


Fig. 13.—The completed steel work, the tile arches and the beginning brick work, giving an idea of what the future building will look like. (It will be noticed that the angle at which the camera was directed makes the building appear slightly on the bias. The reader is assured, however, that the architects are taking care to have the building erected on the square.)

TOOTHPICKS AS FOREIGN BODIES

G. M. LIVINGSTON, M.D.
MANISTIQUE, MICH.

I wish to report a somewhat unique case occurring in my practice a short time ago.

The patient, H. B., hotel proprietor, is a strong-looking, rugged man, 35 years of age, of splendid physique, and up to the occurrence to be reported had been in excellent health.

Early one morning I was called to this patient and informed that he had suffered from most distressing abdominal pains during the past night. These he described as "cutting" or "stabbing," and while diffused somewhat over the greater part of the abdomen, they were localized for the most part in the lower gastric region, near the median line. At first glance one would think of a beginning gastro-enteritis or a possible nidus of infection in the right iliac fossa, but further inquiry into the probable cause of the trouble elicited the following interesting history of the case.

For a number of months previously, perhaps a year, the patient had been in the habit of chewing wooden toothpicks, until for the most part they were reduced to pulp; he often swallowed the pulp with occasional pieces of toothpicks not masticated. He always carried a supply of picks in a convenient pocket and almost constantly during the day had one or more pieces in his mouth. This became such a fixed habit that he chewed and swallowed or ejected the masses of woody fiber unconsciously, replacing them from time to time with a fresh supply from his pocket.

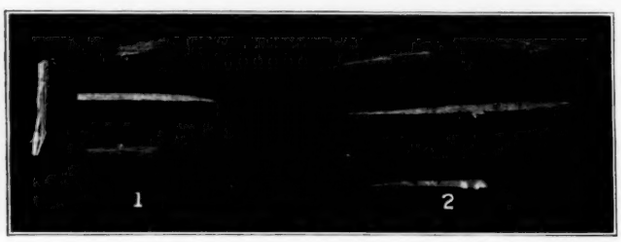
Fig. 14.—View of the fronts of the old and new buildings, the brick work of the latter nearing completion.

I found that he was of decidedly nervous temperament, jerky in his movements, and of restless, uneasy disposition. When talking, especially if excited, he seemed wholly unconscious of the fact and indifferent as to the consequences of taking these foreign bodies into his stomach. On the occasion in question, he informed me that he had at 4 p. m. on the previous day, while talking and laughing with companions, swallowed a number of toothpicks that happened to be in his mouth at the time—three or four pieces, one of which was almost full length. He regretted this somewhat unusual occurrence and anticipated trouble from it, but felt no discomfort for about an hour and a half afterward. He was not able to sleep, and endeavored, but unsuccessfully, to control pain by the free use of spiritus frumenti, aqua menthæ piperitæ, etc. On my first visit I administered morphin hypodermically, repeating this procedure a number of times during the day and later the same evening. No food was permitted, and only a small quantity of spirits to counteract the condition of shock from which he suffered. On the following morning the patient expectorated small quantities of blood, at which time I administered a large dose of oleum ricini. During the day a second dose was prescribed, with the result that the patient vomited freely. Examination of the vomitus, which contained blood, showed the presence of one small pick. There was no abatement of symptoms, and, following the further administration of the oil, I prescribed high rectal enemas and continued morphin hypodermically to control the intense pain. The same evening he vomited freely, with considerable quantities of blood and other pieces of picks. The severe discomfort experienced in the upper abdomen now almost disappeared and he rested comfortably.

On the fourth day following this, the patient had a small hemorrhage from the bowel, accompanied by a large evacuation, and with the latter passed the picks shown at 1. On the fifth day he had a severe hemorrhage, passing twenty ounces of blood per rectum, and at the same time the picks shown at 2. This was followed by complete relaxation and cessation of all pain. Recovery from this time was prompt and uninterrupted. The stools were watched for a number of days without evidence of other of the foreign bodies having been passed.

I call attention to the following points:

1. The habit of toothpick chewing, which is not unusual, and the swallowing of the woody fiber.



Fragments of toothpicks. Those on the left were passed on the fourth day; those on the right, on the fifth day.

2. The manifestations which may be present when foreign bodies of this character are forced through the pyloric orifice and later through the ileocecal opening, in this instance resulting in laceration of tissue and consequent hemorrhage from stomach and bowel.

3. The ability of the bowel to carry easily arrested foreign bodies to expulsion per anus, with alarming symptoms and no serious sequelæ.

108 South Cedar Street.

COCCIDIOIDAL MENINGITIS

WITH SECONDARY INTERNAL HYDROCEPHALUS AND DEATH (ANAPHYLACTIC?) FOLLOWING A SECOND INJECTION OF FLEXNER'S SERUM

H. A. L. RYFKOGEL, M.D.

Adjunct in Surgery, San Francisco Polyclinic and City and County Hospital

SAN FRANCISCO

History.—Dec. 18, 1907, the patient, then a child of 2 years, was brought to me by his father. The child had been suffering for a time with numerous subcutaneous abscesses, concerning the nature of which he had consulted numerous medical advisers, the majority of whom considered tuberculosis or syphilis as the possible etiologic factor.

The father stated that, in October, 1907, when two years and two months old, the child began to walk lame and shortly afterward his right ankle became red and swollen.

A few days later an abscess was discovered on the back of the head. Within a few weeks many abscesses developed on the scalp, in the neighborhood of the joints of the knees, toes, shoulders, elbows and thumbs, and over both upper eyelids. These were opened from time to time by Dr. Kellogg of Bakersfield and the pus evacuated. The child now failed rapidly, had night sweats, and refused nourishment.

In December, when I saw him, he showed about twenty of these abscesses either actually suppurating or in various stages of healing. They all involved the subcutaneous tissue only and had usually developed in symmetrical pairs. In the various situations mentioned were either scars, wounds evidently showing healing, or unopened abscesses, which varied in size, but were never over one and one-half inches in diameter. The skin over the unopened abscesses was not reddened, nor did the child complain of pain. At no place did the skin itself seem to be involved in the process. Certainly the characteristic coccidioidal skin lesions seen in the case reported by Drs. Montgomery, Morrow and Ryfkogel were absent throughout the child's illness.

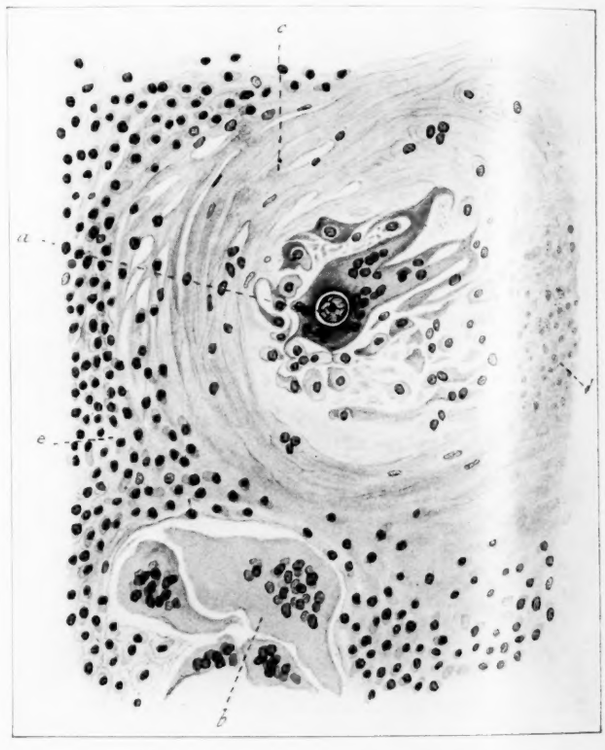
The abscesses that had been recently opened secreted a thin pus, and, on account of their overhanging edges and pale flabby granulations, greatly resembled tuberculous lesions. Their tendency to heal spontaneously, however slowly, was marked, and when curetted and swabbed out with pure liquor formaldehydi by Dr. Kellogg, they always healed very rapidly.

The number and character of the lesions, together with the boy's residence in the San Joaquin Valley, made me suspect an infection with the fungus coccidioides, and an immediate examination of the pus showed the characteristic round, doubled-contoured bodies.

The boy now returned to Bakersfield and Dr. Kellogg instituted more vigorous treatment of the abscesses as above outlined, and in addition administered syrup of hydriodic acid and formic acid, giving the latter because he had seen certain favorable results from it in the treatment of tuberculosis.

The boy now began to improve so rapidly that in July, 1908, Dr. Kellogg was able to write that the patient had no more visible lesions and that the forty or more abscesses that he had treated were now well. In August, a swelling appeared over the left elbow which soon spontaneously disappeared.

From August, 1908, until April, 1909, the boy remained apparently well. In this latter month, while playing one day, he suddenly ran to his mother saying that he had a severe headache. He was put to bed, had an attack of



From Dr. Ryfkogel's case of coccidioidal meningitis, showing meningeal exudate; a, parasite in giant-cell; b, giant-cell; c, fibrous tissue; d, area of degeneration; e, area of active regenerative process.

vomiting, next day was unable to walk, and developed a high temperature, which was accompanied by delirium and rigidity of the limbs, and, after lasting a month, disappeared. His mentality now began slowly to deteriorate, and the rigidity of his legs, which had disappeared with his fever, returned.

In July, the patient was again taken to Bakersfield to consult Dr. Kellogg, who made a diagnosis of internal hydrocephalus and referred him to me for surgical treatment, if this offered any hope.

Examination.—At the time the patient was a well-developed boy of four years, showing all the signs of an internal hydrocephalus. His head had been growing rapidly in the past sixty days, and his parents had been under the necessity of constantly increasing the size of his caps. His forehead showed marked bulging. The child was evidently blind; his pupils were widely dilated; and an ophthalmoscopic examination revealed a double optic atrophy. The patient heard only slightly, because he paid not the least attention to any but loud and sudden noises, which caused him to start somewhat. The child was an absolute idiot, and made practically no spontaneous movements. Thus he would lie in any position in which he was placed, though when irritated he would move his arms and give forth a monotonous crying, and sometimes call "mamma," the only word remaining to him of his previous extensive vocabulary. He would also open his mouth when his chin was touched or food or drink put to his lips. The child could not, or at least would not, move his legs. His knees were more or less rigid continually, but became much more so when the limbs were suddenly moved. Pin-pricks were felt everywhere. The Babinski reaction was present bilaterally. His rectal temperature was 99.2 F., his pulse-rate 88, and his respiration 22.

Diagnosis.—The question to be now decided was whether the boy had a meningitis due to the fungus coccidioides, or whether he had completely recovered from his original infection with this mold, and in April had had an attack of epidemic cerebrospinal meningitis. On July 20, 1909, a spinal puncture was made, and examination of the fluid withdrawn showed 60 per cent. neutrophils and 40 per cent. lymphocytes. Cultures were negative. A few palely stained bodies were seen, which Dr. Brown, who saw the boy with me, and I thought might be degenerated diplococci.

Treatment and Course of Disease.—As Dr. Brown had seen some rather remarkable results in some chronic cases of epidemic meningitis following the administration of the serum of Flexner, we decided to give him a dose in the hope of putting a stop to any further advance of the disease. Accordingly, on July 21, 45 c.c. of the cerebrospinal fluid were withdrawn and replaced by 45 c.c. of anti-meningococcic serum. Quite a reaction followed and was accompanied by increased rigidity of the legs and spine and a rise in temperature to 102 F. Within twenty-four hours, however, the boy returned to his previous condition. No improvement was noted. From this time until August 20, about 30 c.c. of cerebrospinal fluid were withdrawn every other day by lumbar puncture in the hope of relieving to some degree the hydrocephalus. At times the spasmodic contractions of the muscles seemed to be relieved by this puncture and at no time were they intensified thereby.

On August 12, the patient's condition was practically the same as it had been when I first saw him, and Dr. Brown and I decided to give him another injection of the Flexner serum. At 7:30 a. m., 45 c.c. were given after the usual preliminary withdrawal of spinal fluid. At 9 a. m., the patient began to be very restless. His temperature at 12 m. had risen to 102, at 4 p. m. it was 104 F. I now withdrew 30 c.c. of spinal fluid and the patient was temporarily relieved, the temperature dropping to 103. It is worthy of note that the withdrawn fluid showed no trace of the pigment present in the serum injected, although only nine hours had elapsed. By midnight the temperature had risen to 105, the neck, back and legs had become very rigid, and the muscles of the right arm began to show frequent paroxysmal contractions. The patient began to perspire freely. By 8 a. m. of the second day the muscles of the back and all extremities were in a state of tonic contraction, there appeared a rapid nystagmus, the pupils, which had previously been dilated, became contracted to pin-head size, and the temperature had risen to 106. At 5 p. m. it was 107, and at 6 p. m., or 34 hours after the injection, the patient died.

The autopsy was limited to permission for the undertaker to remove the brain. This was badly torn during removal and further distorted by placing in a small jar.

Autopsy.—The specimen received from the undertaker consisted of 500 c.c. of cerebrospinal fluid and a more or less distorted brain. The lateral ventricles, as well as the third and fourth, were all greatly dilated. The aqueduct of Sylvius was not obstructed, but greatly dilated, being funnel-shaped, with the apex pointed forward. The structures at the base of the brain were imbedded in a mass of exudate, which was slightly pinkish in color and varied in thickness, from 2 mm. over the medulla oblongata to 1 cm. at its anterior edge. The ependyma was everywhere thickened, but neither it nor the chorioid plexuses seemed to be involved by the coccidioidal process.

Microscopic Examination.—Macroscopically the exudate showed numerous tubercles, microscopically very similar to those seen in tuberculosis, consisting of giant cells, endothelioid cells and lymphocytes. There was, however, a marked tendency to formation of fibrous tissue, and the giant cells were frequently surrounded by whorls of fibrils. Many of the giant cells contained young forms of the fungus coccidioides, and cultures made on agar showed the typical growth of the organism.

COMMENT

That the anaphylactic reaction of Richet was the immediate cause of death in this case seems probable. Rosenau and Anderson set the incubation period in which an animal becomes completely sensitized to the toxic action of a proteid by a preliminary dose of the same proteid as 10 to 12 days, and showed that once an animal was sensitized it became so indefinitely. In guinea-pigs the respiratory center seems to bear the brunt of the toxic action; in man, however, as Anderson has pointed out, the reaction is largely local and the heat-regulating mechanism is greatly disturbed.

In the case under discussion the signs of local irritation of the meninges and cerebrum, such as extreme restlessness, great contraction of the skeletal muscles, including those not previously affected, and extreme contraction of the pupils were evident. The abrupt rise of the rectal temperature from 99.2 to 107 F. in thirty-four hours certainly showed an unbalanced heat-center.

A review of four cases of death following the second injection of antimeningococcic serum has been reported by V. Hutinel.[1] Two of these cases probably suffered from a complicating tuberculous meningitis, and Hutinel ascribes the hypersensitiveness as due in part to this disease, and cites the well-known hypersusceptibility of tuberculous cases to a second injection of horse serum. The sensitiveness in my case thus bears some relation to these, and it is another evidence of similarity of the fungus granulomata to tuberculosis.

An excellent review of the eighteen cases of coccidioidal infection previously reported is that by P. K. Brown,[2] who discusses the very definite differences between the fungus coccidioides and other pathogenic oidia. He makes the statement that budding of the fungus bodies occurs in pus; but I have never seen this in any of the cases I have examined.

A very thorough study of the life history of the fungus and of certain cases has been made and the results published by W. Ophüls.[3] I have also previously published a short review[4] of the whole subject.

As in ten of the cases previously reported, my patient showed no lesions of the skin itself. As noted in some of the cases, there was present a tendency of the lesions to heal, and lesions of the meninges found at the autopsy were definitely regressive, no pus nor active inflamma-

1. Hutinel: Presse méd., July 2, 1910.
2. Brown, P. K.: Coccidioial Granuloma: Review of the Eighteen Cases and Reports of Cases 15 and 16, THE JOURNAL A. M. A., March 2, 1907, p. 743.
3. Jour. Exper. Med., vi, Nos. 4, 5 and 6.
4. California State Jour. Med., vi, No. 6.

tory area being present. A study of this case shows that although all the patients died, except where early amputation of the limb showing an isolated lesion was done, nevertheless the disease is not necessarily fatal, and a cure can be hoped for. Treatment must be carried out probably along the lines of vaccine therapy.

162 Post Street.

HUMAN SARCOMA CULTIVATED OUTSIDE OF THE BODY

A THIRD NOTE *

ALEXIS CARREL, M.D. AND
MONTROSE T. BURROWS, M.D.

NEW YORK

In our last note[1] we have shown that a fowl sarcoma could grow outside of the body. We expressed also the opinion that malignant tumors of the human organism could be caused to grow in the same manner. In the present note, we shall briefly describe a successful attempt to cultivate *in vitro* a sarcoma extirpated from a woman by Dr. Coley.

Through the kindness of Dr. Coley and of his assistants of the Memorial Hospital of New York, we were able to make a few cultures with fragments of a sarcomatous tumor taken from a woman 35 years old. The history of the patient given by Dr. Moore of Iowa, can be summarized as follows:

Thirteen years ago, after a traumatism, a tumor developed on the upper part of the right fibula. Last June the tumor was extirpated. It recurred soon and last September the new tumor and the fibula were removed. The growth presented then the anatomic characters of a sarcoma. It recurred again very soon and the patient was brought to the Memorial Hospital of New York.

On Oct. 27, 1910, at 4 p. m., Dr. Coley extirpated the tumor. During the operation some blood to be used as medium was taken from the arm of the patient. At 4:30 a few fragments of sarcomatous tissue were inoculated into the plasmatic medium. Twelve cultures were made and brought immediately to the Rockefeller Institute.

On October 28 at 8:30 a. m., that is, sixteen hours after the inoculation, the cultures were examined. In every culture the medium was very fragile. The main mass of the clot had been torn away from the tissues during the transportation of the slides. The sarcomatous fragments were held by a very thin layer of fibrin, which was closely adherent to the cover-glass. All the lower part of the medium was fluid. In spite of these unfavorable conditions, fusiform cells protruded in many points from the tissue. In several cultures, many spindle and round cells were observed to be wandering through the medium. Ten of the twelve cultures gave positive results. The growth was far less active than were the cultures of the fowl sarcoma. This was due probably to the fact that the cells were vegetating under difficult conditions on account of the partial liquefaction of the medium. Nevertheless a large number of fusiform cells radiated out and wandered into the very thin layer of plasma adherent to the glass. Their morphology could be studied very easily with an oil immersion lens. The characters of these cells will be described in a later publication. The purpose of the present article is merely to show that all the details of the living cells can be observed at every instant of their evolution.

On October 29, large fusiform cells with long tails, round cells and a few multipolar cells were wandering from the tissue through to the medium. The plasma was clear and thin and the changes occurring in the cells could be observed without difficulty. For instance, one large fusiform cell, after having been slightly shaken, broke loose, while we observed it. It became immediately a small granular sphere. At 9 a. m., the cell had the appearance of a spherical mass composed of dense protoplasmic granulations. At 9:03 it became slightly oval. At 9:06 it was more oblong. Progressively the granulations became less densely packed in the anterior part of the cell. At 9:18 the posterior end was slightly pointed, and a clear spot appeared at the place where the granulations were less dense. At 9:20 there was a great activity among the protoplasmic granules of the posterior end. These granules were flowing into the medium and producing a short tail attached to the cell. At 9:22 the clear spot became a real nucleus with a sharp outline. A faintly opaque nucleolus appeared at the same time. At 9:25 the tail was longer. The cell also had increased very much in size. At 9:30 the posterior end developed a very long and pointed tail, while the anterior end was still blunt. The anterior end grew progressively. At 9:45 the cell had assumed the same appearance as before 9 o'clock. This observation shows how accurately the living cell can be studied in a culture.

On October 30, some of the cultures were vegetating very actively. Two of them were fixed and stained. Their examination confirmed the observations made on the living cultures. On November 1 most of the cultures were dead or had been fixed. Only one still lived on November 3.

We must conclude from this experiment that it is possible to cultivate outside of the organisms fragments of a human sarcoma in a manner similar to that of the animal sarcoma previously described. Therefore we will probably be able to study *in vitro* the growth of the various human malignant as well as benign tumors and to follow all the morphologic characters and changes of the cancerous and other cells during life.

We wish to thank Dr. Coley, his assistants and the staff of the Memorial Hospital of New York for having made possible the cultivation for the first time of a human tumor outside of the organism and thus to develop a new method for the study of human cancer.

* From the laboratories of the Rockefeller Institute for Medical Research.

1. The previous articles have appeared in THE JOURNAL A. M. A., Oct. 15, 1910, p. 1379, and Oct. 29, 1910, p. 1554.

ACUTE THYROIDITIS WITH EDEMA OF THE GLOTTIS

FOLLOWING EXPOSURE TO EPIZOOTIC OF HORSES

J. PERRY LEWIS, M.D. AND
BERNARD J. O'NEILL, M.D.

SAN DIEGO, CAL.

History.—The patient, a man of 56, a hostler, had been taking care of six horses, suffering with the so-called epizootic, during the two weeks immediately preceding his illness. The symptoms observed in these horses were fever, thirst, anorexia, cough, sneezing, nasal discharge (at first watery, later of a "red gravy" character) and enlarged, tender glands in the neck. The patient is an alcoholic of careless habits, and had been accustomed to drinking from the same trough as the

horses, and at times the sick horses would sneeze or cough into his face. On the day before the onset of his trouble, the patient felt a slight soreness of the throat and some pain on swallowing, but this passed away before night and he was apparently well the next morning and went to work as usual. Late in the afternoon, while engaged in his usual work, intoxicated, but feeling no symptoms of any kind, the patient suddenly fell to the ground in a choking fit.

Examination.—He was hurried to our office, where examination showed him to be in a condition of extreme dyspnea and cyanosis, with his thyroid gland greatly enlarged, tense, elastic and quite tender. The skin over it was somewhat red and edematous. This swelling was so pronounced as to attract the immediate attention of all who saw him, though his fellow workmen, who had been close by him all the afternoon, had noticed nothing. The patient insists that the entire swelling developed within a few moments. No enlarged glands could be palpated at this time, the swelling being definitely limited to the thyroid. Further examination revealed a very slight pharyngitis and an edema of the glottis. A spray of adrenalin chlorid quickly relieved the more urgent dyspnea, though for a short time a tracheotomy seemed inevitable.

Treatment and Course.—The patient was removed to a hospital and put to bed with an ice-bag about his neck. Morphin was administered and the adrenalin spray repeated whenever the dyspnea became excessive. By the following morning the symptoms had been considerably lessened and the swelling in the gland had begun to subside, but the swelling now began to extend to the surrounding parts, including the lymph-glands, and the pharyngitis became more marked. At no time was the pain severe, nor did it radiate to the ears, teeth, etc. Dyspnea and hoarseness were the most marked symptoms and these disappeared within three days. At the onset the temperature was 99.6 F. and the pulse 98. Both became normal the next day. There was some dysphagia at the beginning; this became more marked later, and, together with the pharyngitis, persisted for about two weeks. On the fourth day the patient was able to leave the hospital and go back to work. At the end of a week a slight ecchymosis appeared over the manubrium. On the sixteenth day the patient was discharged and has had no further trouble.

No examination of the blood was made.

The noticeable features were:

1. The evident infection from the horses suffering with "epizootic." No history of trauma or other etiologic factor could be elicited.
2. The edema of the glottis at the onset.
3. The seemingly very rapid development of the swelling of the thyroid gland.
4. The lack of involvement of the lymph-glands until some hours later.
5. The rapid recovery.

Therapeutics

CHRONIC HYPERTROPHY OF THE PROSTATE

This condition should be distinguished from enlargement of the prostate due to a subacute prostatitis, which is an inflammation that affects the ducts and is generally due to an infection that has come from the urethra. Although this enlargement of the prostate may persist for some time, proper local applications and massage will generally effect a complete cure.

True chronic hypertrophy of the prostate develops insidiously and is of frequent occurrence, as it is present, in various grades, in about 65 per cent. of all men after the age of 50. The treatment of this condition is well discussed under three heads: prophylactic, palliative, and operative.

As the etiology of chronic hypertrophy is not clearly understood, it is difficult to lay down a definite rule for prophylaxis. While it is probable that this is a normal accompaniment of old age, the reason that it occurs so frequently at an earlier age, from 50 to 60, is probably because of excessive or abnormal sexual activity. Investigations seem to show that benign hypertrophy occurs very much more frequently in the married man than in the single man; in fact, some statistics seem to show that it occurs ten times more frequently in married men. It would seem, then, that it should be the duty of the family physician to warn the young husband against unnatural or excessive stimulation of the sexual function, and thus perhaps prevent a future prostatic hypertrophy.

There seems to be no question that frequent, and especially abnormal sexual excitement does congest the prostate, and repeated prostatic congestions lead to a slow hypertrophy. It is also probable that a bad heart which allows venous congestions, especially when the veins of the pelvis (and the hemorrhoidal veins especially) are dilated, would become an impetus to passive congestion and later to hypertrophy of the prostate. Persistent constipation would be another added cause of this passive congestion. Bladder irritation and irritability, if frequently repeated and never completely cured, could be another cause; while varicocele could be another cause for prostatic congestion. In other words, anything that tends to repeated pelvic acute congestion or chronic pelvic passive congestion may well be an exciting cause to the enlargement of the prostate, which organ is always apparently ready to enlarge after the age of 50. Consequently, any treatment that removes or prevents these congestions would be prophylactic treatment against hypertrophy of this gland.

The early symptoms of an enlarging prostate are increasing frequency of urination, especially at night; slight delay in starting urination, especially early in the morning or when the bladder is full; and a slight diminution in the expulsive force of the stream. These symptoms have usually been present many weeks, and even months, before the physician is consulted. By this time the hypertrophy, as can be readily understood, has advanced to a considerable degree, and enlargement of the prostate, as shown by examination, is generally positive, and the question immediately arises as to whether palliative treatment should be advised or an immediate operation performed.

It would seem unwise, even with the very low mortality when the operation is done at this period, from the fact that there is a mortality, to urge immediate operation. Neither the condition itself nor the operation is really the cause of the mortality, but it is due to the concomitant or coincident insufficiency of the kidneys, possibly to an arteriosclerosis. The fact, however, should never be lost sight of that when a man is suffering from chronic hypertrophy of the prostate he also has probably used his circulatory system to excess, the arterial tension is generally high, the heart may be in perfect condition but undoubtedly the left ventricle has become hypertrophied to combat normally increased tension of the man's life and the increased tension of the arterial system due to advanced years. Also, although the urine apparently may be perfectly normal, the kidneys are often imperfect at this age, as would be evidenced by repeated examinations of the twenty-four hours' urine on different diets and under different irritations or exertions. In other words, kidneys, that are perfect during the ordinary daily life, when the patient is subjected to an etherization or to the slight shock or

disturbance of an operation, become insufficient, and uremic symptoms readily develop. Therefore, the treatment of the above condition should at first be palliative.

The great source of danger is residual urine, *i. e.*, the urine which remains in the bladder after the patient has urinated and which he cannot evacuate by voluntary effort. That there is residual urine can be determined only by the passage of a catheter. A soft rubber catheter properly sterilized can generally be passed without difficulty, this after the patient has urinated and after the parts are thoroughly cleansed and rendered aseptic. A study of the urine that the patient passed (and best a study of it in the two-glass test), and a study of the urine which may be drawn by catheterization, *i. e.*, the residual urine, will not only determine the character of the urine, but also the condition in the bladder. An acid urine, clear, without pus, without much mucus, without blood caused by the catheter rubbing over the prostatic urethra, shows that temporizing and palliative treatment should be the treatment elected. The evacuation of clear urine by the patient does not positively preclude the possibility of even a large amount of residual urine, as absolutely clear urine may be passed on repeated days and yet catheterization remove a large quantity of turbid residual urine. If there is no residual urine, good, sensible tonic treatment, a proper amount of rest, a properly regulated diet, good management of the bowels, prevention of chilling, and the happy medium of never attempting to hold the urine too long or on the other hand answering every frequent flitting desire to urinate, may hold the patient in the same condition for months or even years. It is undesirable to allow the patient to urinate too frequently, because it prevents the bladder from becoming normally distended, and the viscus becomes smaller and smaller until life becomes a misery.

If there is much mucus from the bladder, or if there is prostatic irritation sufficient to give local aching or a pain in the penis, the first treatment should be to draw the residual urine, then gently wash the bladder with a warm 2 or 3 per cent. boric acid solution. When the bladder washings are clean, the bladder should once more be filled with the warm solution and then the catheter removed and the patient allowed to pass the liquid. Care should be taken not to over-distend the bladder with these solutions. This washing may be done every day for a few times and then infrequently, or absolutely stopped if the symptoms subside.

If there is but little mucus in the urine, but vesical irritability, especially at the neck of the bladder or perhaps slight referred pain at the penis, the instillation into the bladder of 1 c.c. (15 minims) of a 1 per cent. solution of nitrate of silver, once in 5 days for a few times, or injection into the bladder of 60 c.c. (2 ounces) of a 1 to 5,000 solution of nitrate of silver and then withdrawing the catheter and allowing the patient to pass the solution, will frequently effect a temporary cure, and may give the patient relief for months.

If pus is present in the urine and the condition is acute cystitis, the usual treatment of this condition must be given, viz., daily bladder washings with warm boric acid solution. If a chronic cystitis has already developed, the bladder-washing must be with some of the various silver solutions, either an organic silver solution or a very weak nitrate of silver solution. The silver solution must not be used too frequently. One would hardly advise an operation during an acute cystitis, and would not urge it in chronic cystitis until the bladder was as surgically clean as possible; in other words, prolonged, proper treatment, with the patient at rest. It is unnecessary to state that an operation when chronic cystitis is present, *i. e.*, when an infection is present, is of much more serious prognosis. It is impossible to tell how much the ureters may have become infected or whether the kidneys have been injured from the infection in the bladder, to say nothing of their secretory ability.

Whenever there is cystic irritability or genitourinary inflammation the diet should be just as carefully regulated as is so well understood in specific urethritis, viz., in acute cystitis or in acute irritability of the bladder a milk and cereal diet should be given with rest and hot general baths. In chronic inflammation of the bladder or of the prostatic region daily hot sitz baths are of great benefit, and the diet should be of simple meats, ordinary vegetables, cereals, and fruit. Highly spiced foods should be forbidden, coffee and tea should be forbidden, and generally tobacco also, excessive use of alcohol should be interdicted, and no drugs should be given that could irritate the genitourinary tract. As above urged the bowels should be carefully regulated. Constipation does harm in all pelvic inflammations.

Acute irritability of the bladder may be partially relieved by the judicious use of drugs that render the urine alkaline, but when there is an enlarged prostate and any tendency whatever to residual urine, the urine should not be rendered long alkaline. The simplest prescription for this purpose is:

℞	Gm. or c.c.		
Potassii citratis	40		ʒix
Aquæ gaultheriæ	200	or	fl. ʒvi

M. et Sig.: Two teaspoonfuls, in water, three times a day, after meals.

It is often inadvisable to have the patient drink a great deal of water as it will over-fill the blood-vessels (the age of this patient must not be forgotten), raise the arterial tension, increase the frequency of urination, and may precipitate the occurrence of residual urine.

If there is chronic cystitis, no drug is probably more valuable than hexamethylenamin, which may be given as follows:

℞	Gm.		
Hexamethylenaminæ	10	or	ʒiiss

Fac chartulas 20.

Sig.: A powder in half a glass of water, three times a day, between meals.

If there is residual urine and this (which may vary in amount from day to day) persists from day to day, it is only a question of time when the patient will have a sudden stoppage and be unable to empty the bladder and must send for a surgeon for immediate catheterization on account of distention of the bladder with resulting paralysis. This having once occurred, some surgeons advise the use of a catheter continuously. It is possible in such an instance that if a proper attendant with the most careful cleanliness uses the catheter at least three times in twenty-four hours, and perhaps better four times, in a few days the bladder may return to its proper tone and may be as good or better than it has been before for a number of months, *i. e.*, may not contain so much residual urine. This should be tried. If, on the other hand, the bladder does retain residual urine, and the urine tends to be alkaline and turbid, the man must be given a catheter to use himself, either once in twenty-four hours to remove all residual urine, or three

times in twenty-four hours if he cannot at any time well evacuate his bladder. This kind of treatment is sometimes necessary on account of the inadvisability of operating, but is generally inexcusable, as it is only a question of time when such a bladder will become seriously infected and chronic cystitis, incurable, will be the result, and cause the death of the patient. Therefore, unless there is some positive reason why a man can not be operated on, operation should be advised, and advised before infection has occurred.

Some patients develop a chill after the passage of even a soft rubber catheter, or even have what has been called the urethral fever, with considerable rise of temperature for some hours. This is not of frequent occurrence, and may never be seen by an individual practitioner. Other surgeons have seen it so frequently that they recommend the administration of some drug to prevent this hyperirritability of the urethra, such as bromids, and even quinin has been recommended. If such a reaction occurs, the patient should be kept in bed for twenty-four or thirty-six hours and treated symptomatically. No harm seems to come from the disturbance.

Simple palliative treatment of the condition being unsatisfactory, reflex pain in the penis or irritability of the bladder persisting, cystoscopy should be carefully done, and the possibility of a stone in the bladder should be considered. It must, however, be urged that a mild subacute condition is often precipitated into an acute one by such instrumentation. However, it is a means to an end, *i. e.*, positive diagnosis of the conditions, and must often be done, but not done without due and careful consideration. To save repeated instrumentation, at the same time the bladder is cystoscoped, it is well to pass a catheter into each ureter to examine the urine from each kidney separately. The results of this examination will aid in the decision as to whether or not an operation should be performed.

It is the object of the careful physician and surgeon to aim to determine, when palliative treatment is useless or in any given patient is becoming useless, to advise operation if the kidneys and circulation are in good condition before the patient becomes miserable, before the bladder has become infected, before the bladder has become seriously thickened, and before it has become paralyzed from over-distention or has become badly contracted from protracted and frequent efforts to expel urine over the obstacle of the enlarged prostate. As above stated, infection of the bladder may creep up toward the kidneys, and with infection of the bladder, and even without it, continued pain and irritation in this region may cause a general debility, loss of appetite, emaciation and feebleness. Of course, any of these conditions being present when the patient first comes to the physician would demand first rest, careful preparation of the bladder and the pushing of nutrition, and second operation; but the patient having been under a physician's care the operation should be advised and done before he reaches this sad condition.

Which particular operation is best for a given individual, or the technic of the operation are questions of surgery; it is enough for the physician to decide that an operation is necessary. The results of perineal prostatectomy are surprisingly good when one takes into account the advanced age of many who submit to the operation, the frequent coincident cystitis, the history of prolonged pain and often debility of the patients, and the impairment of circulatory and excretory organs concomitant to their age. Many patients over 80 years of age are operated on with good results and their lives greatly prolonged by the operation, and the mortality has been placed even below 4 per cent.

The differential diagnosis between tumors of the prostate and simple hypertrophy of the prostate can not well be described. The greater amount of pain in most tumors of this age (the most frequent being cancer), with the greater rapidity of growth, with the nodular feel and enlargement in all directions as well as into the bladder, generally quickly shows that the enlargement is malignant and not benign.

GLYCOGEN

This substance has for some time been suggested, then advised, then lauded, advertised and sampled as "an antitoxic and bactericidal agent" on account of its "stimulating the natural resistance of the organism to pathogenic invasions." The indications have been stated to be "tuberculosis, typhoid fever, scarlatina, furunculosis, diphtheria, influenza, neurasthenic conditions, weak heart, migraine, morphinism, tobaccoism, etc." For these processes the substance has been offered in various capsules for administration by the mouth. In spite of favorable articles written on the subject the question is: Can these assertions be sustained?

As glycogen is a physiologic product it is well to refer briefly to the physiology connected with its production. In the first place, glycogen is the ultimate liver product of starch and sugar. Its object seems to be for a storage product for the production of dextrose. It is less soluble than sugars, and is stored in the liver for re-metabolism into dextrose to be circulated in the blood, which dextrose is taken up by the muscle-cells and re-converted into glycogen for muscle health and activity. Taking cane sugar as a sample of sugar ingestion, it is soon converted into simpler sugars, is then absorbed, reaches the liver, and in part is converted into glycogen for storage purposes as above described. If glycogen is administered it is apparently digested and absorbed as sugar, and it can be of no value until taken up by the liver cells and there converted into dextrose for circulation in the blood to reach the muscles and there form muscle glycogen. In other words, there seems to be no apparent physiologic reason why glycogen administered by the mouth can be of any more value than cane sugar, milk sugar, grape sugar, malt sugar or starch, so far as glycogen production or sugar stimulation is concerned.

If glycogen is given subcutaneously it may share the property of many other substances of causing a temporary increase in the number of leukocytes. Such increase of the leukocytes has been found to be only temporary and of little phagocytic value in infection.

Physiologically and clinically there seems to be no excuse for administering glycogen or considering it in any way a drug or product of therapeutic value. If glycogen were of value, the amount contained in scallops, which is a valuable and cheap food, would make this method the best and cheapest method of administering it.

Differential Diagnosis Between Specific and Non-Specific Sores.—The following points must be borne in mind: (1) the diagnosis between the more common sores which may occur on the male and the female genital organs and syphilitic chancre; (2) the diagnosis between certain of these sores and the lesions of secondary and tertiary syphilis; (3) the diagnosis between extragenital syphilitic chancres and other lesions with which they may be confounded.—C. F. Marshall, in the *Practitioner*.

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[For other information see second page following reading matter]

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NEW SOURCES OF MEDICAL HISTORY

During the past twenty or thirty years the field for medico-historical investigation gradually has expanded so that its bounds are now far beyond the medical texts of the early and middle ages. The medical historian in his search for new materials has entered the territories of anthropology, ethnology and archeology, and there discovered much that is of tremendous importance for the growth of his science. As illustrations must be mentioned especially the results of recent archeologic exploration in Asia Minor in their bearing on the history of ancient medicine. Discoveries in the last decennium by Assyriologists have moved the beginnings of things medical much farther backward than indicated by the papyrus Ebers and other papyri. Indeed, traces of Assyrio-Babylonian medicine have been followed as far back as four or five thousand years before Christ. During the reign of King Hammurabi, about 2,200 years B. C., medical laws were codified[1] and they give a rather clear insight into some aspects of medicine in those days. We learn that fixed fees were established for certain operations and that the lens was depressed in operating for cataract. These laws probably served as the models for the medical laws of Moses. Of fundamental bearing is the demonstration that the writings of Hippocrates ("Corpus Hippocraticum") present evidences of having been directly influenced by the Assyrian and Egyptian writings. Indeed, by means of the "deadly parallel" it has been shown (Lüring) that a statement of several lines in length has been copied verbatim into the Hippocratic books. Evidences of continuity have been found also between ancient Indian medicine and the Assyrio-Babylonian. Consequently we shall be forced to give up the idea that medicine takes its real start with Hippocrates; Hippocratic medicine undoubtedly is the outgrowth of a long development which extended from the Orient and concerning which we surely shall learn still more. And yet, while Hippocrates may not be the father of medicine in the sense that it sprang fully formed from his head, he remains the central figure in ancient medicine.

1. Holmes, Bayard: The Most Ancient Medical Practice Laws, THE JOURNAL A. M. A., Jan. 28, 1905, p. 293.

From various sources facts have been secured toward the building up of what we may call an exact historical pathology. We have known for some time that trepanation was performed in the neolithic period—this trace of the earliest surgery being found by the study of skeletons of prehistoric age. Quite recently prehistoric skeletons have been found that show caries as well as gibbus (Bartels), indicating the existence of tuberculosis at very remote periods. The examination of nearly two thousand Nubian mummies by Elliot Smith and Wood Jones has yielded interesting results: they found no sure signs of tuberculosis, but the occurrence of appendicitis, of trachoma, of renal biliary calculi, and of simple and deforming arthritis was established. It is said that evidences of arthritis are abundant in old skeletons from various parts. Great difficulties have developed in the interpretation of the nature of caries, exostoses and hyperostoses in old skeletons, and naturally the opinions vary so that in many instances the question whether the changes are owing to syphilis, to tuberculosis, to leprosy, or to other conditions has not been settled. But the syphilitic nature of the lesions in an old Peruvian skull (von Hansemann) has now been accepted by so many experts that the occurrence of pre-Columbian syphilis seems to be settled. The American origin of syphilis, however, is not necessarily indicated thereby, because in 1908 terra-cotta figures from the second century B. C. were found in Smyrna, which Sudhoff asserts show the existence of syphilis in ancient times and in the old world; these figures are said to show saddle-nose, Hutchinson's teeth and other indications of congenital syphilis. It may be recalled that Ashmead discussed the possibility that leprosy might be identified in human figures on certain Peruvian vessels; others lean to the view that here also syphilis is concerned.

Numerous other examples might be given of the medico-historical value of the representations of the human body found on old objects of various kinds. It may be remarked that the study of old paintings from a medical standpoint is of great interest, and it is believed that results of real historical value may be obtained therefrom.

BETTER INSTRUCTION FOR ARMY MEDICAL OFFICERS

As Napoleon once said, war is a business which requires study like any other business. Of late years this principle has been more and more clearly realized and acted on by all the great armies of the civilized world. Prior to 1898 the education of our army for modern warfare was chiefly conspicuous by its absence. Since then, however, a serious interest in the profession of arms has been manifested throughout the service. This awakening has been no less marked in the medical corps than in the line of the army, nor has it been less

necessary. It is now generally realized that a good medical education, with experience in the professional treatment of ill and injured and sanitation, valuable as they are, do not qualify the army medical officer as such. He must in addition have a clear conception of his military duties. This does not mean that he is to ape the line officer. The line officer and the medical officer have each a distinct and well-defined place in the military establishment. A modern army is not made up of independent units but is aggregated into divisions, corps and higher units. The strength of the whole depends on the strength of the component branches, of which the medical is not the least important. The primary object of all is of course to inflict the maximum damage on the enemy and one of the most effectual ways of doing this is by conserving one's own strength. It is here that the medical department plays the most important part.

It is now realized that an unhealthy army is a weak army. Moreover, in war an army must be promptly relieved of wounded or its morale will suffer, while at the same time it must be preserved from unnecessary losses at the front by slightly wounded and sick men gravitating to the rear, which will inevitably be the case unless proper organization and administration obtain. The whole question resolves itself into getting into contact with the wounded at the earliest possible moment and so disposing of them that the strength of the army will be maintained at the maximum and the individual sufferers will have the professional care to which they are justly entitled.

This does not seem such a difficult problem to solve, but the elaborate system of medical relief which obtains in modern armies proves the contrary. While our medical officers have had an extremely complicated organization to learn, the instruction given them was not systematized, and little thoroughly practical was accomplished till within the past few years. This is not strange. It is only within a comparatively short time that there has been anything to build on, so far as the medical department is concerned. There was only a small regular establishment scattered at various small posts from which medical officers could not be spared, while they have been overwhelmed with such pressing and immediate duties that little time was available for the study of the larger problems which would confront them in war.

The National Guard was in even worse case so far as the personnel was concerned. The material of neither was adapted for war. There was little association or community of interest. Now this has all been changed. There is a larger regular medical corps fairly well equipped, a much better-organized militia and a medical reserve corps which includes many of the leaders of the profession in America. Nor should the reorganized Red Cross be forgotten, which, if not yet in the efficient condition attained by the same association in other countries, is now so organized that it is capable of being developed into a thoroughly competent volunteer supplement to the medical corps.

Moreover, until the first "Field Service Regulations" were published about five years ago, no definite plan on which to work was prescribed for the medical department. Since that time there has been a general awakening in reference to that tactical knowledge which is indispensable to every medical officer. This has been manifested in various ways, of which one of the most important has been the establishment of off-year medical camps.

It had been found that we were surprisingly lacking so far as practical instruction was concerned. At this time the only opportunity for such instruction in the field was presented by the maneuver camps. These were necessarily of brief duration so far as the organized militia was concerned. Medical officers at these camps were so fully occupied with other important duties that little time was afforded for the study of medical department organization, administration and tactics. The medical department equipment, too, always left a great deal to be desired, as it universally fell far short of the regulation allowance.

In 1909, the Surgeon-General recommended the establishment of these purely medical department camps. One was opened at Antietam, Maryland, one at Fort Benjamin Harrison, Indiana, and one at the Presidio of San Francisco, California. For these camps the best-qualified medical officers of the regular establishment were selected as instructors and 167 medical officers of the organized militia were in attendance. The equipment, besides certain field sanitary apparatus, consisted of a complete field hospital with an ambulance company, the first time, by the way, that this had ever existed except on paper. All who had anything to do with the camps were enthusiastic in their praise. The opinion expressed by a number of officers was that they had learned more from the camps than from years of previous experience. Nor was the lesson lost on other branches of the service; the engineer and signal corps established similar camps at a later date.

This year, on account of the large camps of instruction, no special camps were established. In the off years, however, it is anticipated that these camps will again come into existence. Of course this is only a beginning; the camps should be bigger and better each year. Not only will they constitute a practical school for the regular establishment and the organized militia, but also for those officers of the medical reserve corps who would take the field in the event of war. Later, too, the field personnel of the American Red Cross will find a place in such camps. They must always, of course, show deficiencies in medical department equipment as was the case at the first camp—deficiencies which must continue to exist year after year if medical department organizations completely equipped according to regulation are not actually exercised in the field.

IS CANCER CONTAGIOUS?

When the public fears contagion from a dangerous disease, all unselfish considerations and regard for anything except personal safety are often forgotten. If this fear is unwarranted, the hardships inflicted on the victim of the dreaded disease are often particularly distressing, as seen, for example, in the abuse suffered by many leprosy patients in this country. Such misdirected efforts are plainly to be combated by the medical profession, for they add much unnecessary suffering to that naturally in store for the victims of disease; but, on the other hand, we need to be very sure of our grounds before we let down the bars which may be needed to prevent the spread of disease.

There has long existed a fear that cancer possesses contagious properties, for we find that in the health regulations of Prussia in 1797 cancer is included among the contagious diseases. While the experience and the teaching of most physicians have led them to harbor no personal fear of infection with cancer, yet they are frequently consulted concerning this possibility by members of the immediate family of a cancer patient, and certain statements which have appeared from time to time in medical literature are sufficient to make the practitioner somewhat uncertain as to just what stand he is really warranted in taking on such an important subject. On this account a brief review of the best available evidence may be undertaken with profit.

In favor of the idea that cancer may be transmitted from one individual to another are numerous cases of conjugal cancer, and cancer occurring in persons who have had charge of or who have been in close association with cancer patients. Behla[1] some years ago collected a rather formidable list of such cases, including 118 cases in which man and wife both had cancer; and other writers have collected similar statistics which, to them, have seemed strong evidence of a possible transmission by contagion. But if we study the cases included in these lists with any fair degree of critical judgment we find that the evidence is far from convincing. Following the rules laid down by Butlin[2] in his excellent lecture on this subject, which demand that to be acceptable for demonstrating contagion it must be shown that the supposedly acquired growth is located in a part that has come in contact with the first tumor either directly or indirectly, that the second growth has appeared within a reasonable time after the first, and that the two growths have the same histologic structure, we find that hardly any of the recorded cases can be looked on as proving a case of contagion. There is no reason for assuming, if a man dies of cancer of the stomach and his widow ten or fifteen years later has a cancer of the breast, that the latter is the result of an infection from the gastric cancer; and yet many similar examples are cited by Behla and others as supporting the doctrine of contagion. We must remember that 9.3 per cent. of all persons passing the thirtieth year of life die of cancer,[3] hence on the grounds of probability an example of conjugal cancer may be expected in one of every 116 couples over thirty years of age.[4] Speaking strongly against the existence of any considerable degree of frequency of cancer in closely associated persons is the result of a *questionnaire* conducted by a medical society in Paris,[5] which received replies from sixty-two of its members. Only one knew of a case of marital cancer, and three reported cases in persons who had attended cancer patients; certainly not more than the laws of probability would lead us to expect. Again, we have the experience of surgeons who are forever acquiring bacterial infections of all sorts during operations, yet without ever developing, so far as the literature records, a single well-authenticated instance of actual infection with a malignant growth from operation on a cancer patient. Senn, indeed, deliberately inoculated himself with cancer tissue freshly removed from a patient, but without any growth resulting.

Certain real or apparent epidemics of cancer in lower animals have been reported in recent years, and these have undoubtedly caused many to wonder whether it is justifiable to assure inquiring patients that there is no reason to fear contagion from cancer. One of the most striking of these was reported in 1900 by Leo Loeb and Jobson[6] and concerned the cattle on a certain ranch in Wyoming, which were frequently attacked by carcinoma of the eye. Other observers have described the development of cancer with unusual frequency in mice and rats kept in cages which previously have held animals with cancer, and several epidemics of thyroid enlargement of supposedly malignant nature have been described in trout in hatcheries. In all these cases there are so many other factors present besides possible contagion, including especially heredity and common environment which may be favorable to cancer formation, that some of the best investigators of experimental tumors do not consider that these epidemics have been shown to depend on contagion. In fact, much of the evidence which the study of transplantable tumors has furnished us is distinctly opposed to the view that there is any serious danger of cancer being communicated from one person to another. First and foremost comes the fact that very exceptionally indeed can a malignant tumor arising spontaneously in an animal be transplanted successfully to other animals, even under the most favorable laboratory conditions. Certain tumors, such as the mammary gland carcinomas of mice and round-cell sarcomas in dogs, give a fair percentage of takes, but hundreds of malignant tumors of animals have been inoculated into other animals of the same species without success. Secondly, when tumors are ulcerating they can seldom be success-

1. Deutsch. med. Wchnschr., June 27, 1901.
2. Butlin: Lancet, London, Aug. 3, 1907.
3. Croner: Klinisches Jahrbuch, II Ergänzungsband.
4. Neiditsch: Inaug. Diss., Berlin, 1910.
5. Jour. de méd. de Paris, April 9, 1905.
6. Loeb and Jobson: Medicine, April, 1900.

fully transplanted, and it is only the open ulcerated tumor which in man can be a source of contagion. Thirdly, close association of cancer animals, in spite of their relatively unprotected condition and uncleanly habits, rarely if ever causes contact infection, and even feeding of cancer tissue fails to cause cancer. There is not the slightest reason to believe that cancer can be communicated through the medium of clothes, secretions and excretions, or in any way but by direct inoculation. In man himself we find that even when an ulcerating cancer is in contact with an opposing healthy surface a cancer infection of the latter rarely occurs, although there are occasional well-demonstrated examples of such a transplantation; and this in spite of the fact that the opposed tissue is part of an individual already cancerous and therefore presumably predisposed to inoculation with his own cancer, as shown by metastatic growths by way of blood and lymph. If a cancerous lower lip rarely, indeed almost never, infects the upper lip with which it is in such intimate contact, what likelihood can there be of a person with cancer ever transmitting his disease to a healthy individual, no matter how closely associated he may be with the latter?

Current Comment

A NEW WORK FOR COUNTY SOCIETIES

Under the leadership of the president of the Missouri State Medical Association, the county societies in that state are engaging in active work for the improvement of public health. A new feature is the cooperation with the state teachers' association. Each county in Missouri has a teachers' reading circle that meets from one to four times a month and which adopts, each year, a book for study. This year, the teachers have taken up "Civics and Health," and at the suggestion of Dr. Herman E. Pearse, the president of the state medical association, the members of the county societies have also secured copies of this book and are studying it with the teachers of the county schools. The possibilities of close cooperation between the county medical society and the county teachers' organization are practically unlimited. If, in addition to the common course of study, joint meetings could be held and mutual helpfulness and cooperation secured, marked improvement of both the public schools and the public health will inevitably result. The plan inaugurated in Missouri is worthy of imitation in other states.

DEATHS AND INJURIES FROM RAILWAY ACCIDENTS

An examination of the statistics of railway accidents in the United States from 1903 to June 30, 1910, as set out in Accident Bulletin 36 of the Interstate Commerce Commission, affords only a moderate degree of satisfaction concerning the progress made in the prevention of deaths and injuries from such accidents. In 1903 the total number of persons injured, including both passengers and employees, was 45,977, and 3,554 were killed. There was a steady increase in both injuries and deaths from this time until 1907, when 76,286 injuries and 5,000 deaths were recorded. This was the high point of the fatalities, falling to 3,764 in 1908 and to 2,791 in 1909, the lowest point reached. The injuries in those years were 68,989 and 63,920, respectively, while in the year ending June 30, 1910, the injuries amounted to 82,374 and the deaths to 3,804, the latter being about the average number for the eight years recorded. The deaths of passengers numbered 321 in 1903 and 421 in 1910. The highest number of fatalities to passengers occurred in 1907 when the number was 647 out of a total of 5,000 deaths, as previously stated. Thus it will be seen that while the injuries almost doubled from 1903 to 1910, the total fatalities in those two years are separated by a difference of only 350, while the fatalities to passengers amounts to only 100 more in 1910 than in 1903. Considering the increase in the trackage of railroads and the tremendous increase in traffic in those eight years, the figures of which we have not at hand, the number of fatalities to both passengers and employees shows a marked improvement. While the number of injuries seems to have practically doubled in spite of the adoption of safety appliances, yet this can no doubt be accounted for by increased trackage, increased business and consequent increase in the number of employees. The number is still vastly beyond what it should be, however, and the killing and maiming of such a vast army of men each year, with the tremendous economic loss entailed, to say nothing of humanitarian considerations, should call forth the most energetic efforts in the way of prevention.

THE INCONSISTENCY OF THE BRITISH MEDICAL JOURNAL

With Crippen, the American quack and convicted murderer, as a text, the *British Medical Journal* discusses editorially the anomalous position which discredited American physicians occupy when they attempt to practice in the British Isles. While such individuals would in many cases be unable to practice medicine legally in any state in the Union, they are permitted to carry on their illegitimate work unmolested in Great Britain. As our English contemporary says: "It is quite time that this free trade in medical practice came to an end..." With this sentiment all right-minded American physicians will agree. The British public should be protected against the dishonesty and malpractice of all quacks, American and others. But quacks are not the only product which we export to the detriment of the British. American nostrums are daily gaining a firmer footing in Great Britain, where the laxity of the laws governing such products allows them to be sold with a reckless disregard for truth that would not be tolerated in the land of their origin. This evil, too, the *British Medical Journal* has recognized, and within the past one or two years it has exposed many medicinal fakes that hail from this side of the Atlantic. All of these, however, have been of the "patent medicine" type; the more insidious "ethical proprietary" frauds have not been dealt with. Nor, in fact, have all of the American "patent medicines" been given their due. In the same

issue of the *British Medical Journal* in which the protest against American irregular practitioners appears, we find a display advertisement of Duffy's Malt Whisky! This nostrum, which in this country has been fraudulently advertised to "cure" consumption, which has been exploited by means of "faked" testimonials, which has been seized by government officials on the charge of being misbranded, which is not advertised in any American medical journal that has any regard for its standing, and which, in fact, is looked on by most self-respecting American physicians as a typical "patent medicine"—this cheap alcoholic nostrum is now to be found in the advertising pages of the *British Medical Journal*, the official organ of one of the most scholarly and dignified medical bodies in the world! The most charitable view to take of this glaring inconsistency is that the deep and abiding ignorance which the average Englishman has of all things American, is neither confined to the uneducated nor restricted to the laity.

A HEALTH CAR CARAVAN

According to the *Journal of the Indiana State Medical Association*, a health car caravan is being organized in Indianapolis, by the father of a tuberculous child. Two automobiles and twelve vans are to make up the caravan, which will accommodate from forty to fifty persons. Nurses, cooks and a physician are to accompany the party. A trip is to be made through Kentucky, Tennessee, Virginia, the Carolinas, Georgia, Alabama and Mississippi. It is the intention of the manager of the enterprise to start from Indianapolis in the late fall and to return in the spring, thus giving the party the benefit of a winter passed in the south and almost entirely out of doors. This plan apparently possesses the advantages of constant outdoor life, without the tedium and monotony of sanatorium existence. The idea is certainly a novel one, but whether or not it is practical remains to be seen.

Medical News

ALABAMA

Hospital News.—The Tuscaloosa Infirmary has been leased by Drs. William G. Somerville and George R. Rau to Drs. J. Hester Ward, Sydney Leach, Daniel W. Ward, Cottondale, Llewellyn L. Duggar, Fairford, J. E. Shirley, Surry F. Mayfield, Harvey B. Searcy, George R. Rau and Artemus D. Killian, Holt.——The Tallegeda Cottage Hospital is now open for patients. It has private rooms and three small wards.

Personal.—Dr. Robert Nelson has been elected city physician of Birmingham, vice Dr. Robert B. Harkness, resigned. Dr. John W. Watts has been reelected assistant city health officer, and Dr. A. M. Duncan, city bacteriologist.——Dr. William H. Oates, Mobile, has assumed charge of the office of state inspector of jails and cotton mills.——Dr. William L. Dinsmore, Decatur, has been elected city health officer, vice Dr. William W. Dinsmore, resigned to accept the position of chief of the Rockefeller Hookworm Commission in Alabama.——Dr. Rhett Goode has been reelected health officer of Mobile.——The Jefferson County Medical Society at its recent meeting, passed resolutions appreciative of the good work done by Dr. Robert Harkness, health officer of Birmingham for nearly 8 years.

CALIFORNIA

Leper in Stockton.—The State Board of Health, after examination is said to have decided that E. D. Fickert of Stockton, now confined in the Veteran's Home at Yountville, is afflicted with a typical case of mixed leprosy.

Hospital Notes.—Maricopa Hospital, which has been closed for several weeks, has been reopened.——The Sisters of Mercy have rented the Strachan Cottage, Brawley, and will use it as a hospital until their own site has been secured.——The High Court of the Independent Order of Foresters, in session at San José, October 11, appropriated $5,000 for the purchase of a site for a tuberculosis sanatorium in Los Angeles.

Personal.—Dr. Rupert L. Blue, San Francisco, has returned from a trip to South America.——Dr. Robert S. Reid has been appointed a member of the board of health of Oceanside.——Dr. Joseph E. Yates, Lemoore, is reported to be ill with typhoid fever at a Coalinga sanitarium.——Dr. Frederick W. Browning, Haywards, has been elected high physician of the Independent Order of Foresters.——Dr. Floyd L. R. Burks has been selected assistant city health officer of Fresno.

CONNECTICUT

New Dean for Medical School.—Dr. George Blumer, professor of theory and practice of medicine in the medical department of Yale University, has been made dean of the school, vice Dr. Herbert E. Smith, retired.

Sanatorium Opened.—The Hartford County Tuberculosis Sanatorium, Cedar Mountain, Newington, was opened October 3, when twelve female patients were removed to the institution from the Hartford Hospital. On the following day the male patients were removed, so that the new sanatorium opens with a population of thirty-four.

DISTRICT OF COLUMBIA

The Milk Question in the District of Columbia.—The Secretary of Agriculture, October 14, issued an order to prevent milk containing extraneous matter, raw milk from cows not known to be free of tuberculosis, or milk of unknown origin, from being sold in buildings occupied by the Department of Agriculture in Washington, D. C. The agreement adopted by Dr. Woodward and the milk producers, October 27, whereby all cows supplying milk for the district must be tested for tuberculosis, was ratified October 31. The agreement embodies three proposed amendments to the regulations for the government of dairy farms. The health commissioner says that producers will be given reasonable time to comply with the new regulations.

ILLINOIS

Convicted.—J. A. Ray, posing as a mechanico-therapist in Lewistown and vicinity, is said to have been found guilty of practicing medicine without a license and to have been fined $100 in the Fulton County court.

Mandel Cottage Opened.—The Emanuel Mandel Memorial Cottage at the Chicago-Winfield Tuberculosis Sanatorium was formally dedicated October 30. The cottage is the gift of Mrs. Emanuel Mandel in memory of her husband, will accommodate twenty patients, and cost about $10,000.

Personal.—Dr. Otto M. Kuehn, New Design, announces his retirement from active practice.——Dr. William S. Wiatt, East St. Louis, had his right leg and three ribs fractured in a collision between his buggy and an automobile in East St. Louis, October 28.——Dr. Harry H. Whitten, Peoria, has gone abroad for study.

Chicago

Gift to Medical School.—James A. Patten, Evanston, has given $200,000 to Northwestern University Medical School to endow and maintain a chair of medical research.

Clinical Week.—Many practitioners from outside have been in Chicago this week to attend the clinics held by physicians and surgeons of Chicago and other cities in various hospitals. The series is announced to continue until November 19. All branches of practice are represented.

Personal.—Dr. Harry S. Gradle, late assistant at Elschnig's eye clinic at Prague, has returned to Chicago and will practice with his father, Dr. Henry Gradle.——Dr. Fred C. Zapffe has resigned as manager of the Chicago Hospital, a position which he has held for several years.——Dr. Aloys Heinen has returned from abroad.

Dances for Hospitals.—The sixth annual charity ball of the Jewish Consumptives' Relief Society netted more than $4,500 toward the establishment of a hospital for advanced cases of tuberculosis.——The charity ball given for the benefit of the Mary Thompson Hospital, at the Blackstone, October 31, netted more than $7,000.

New Hospital for Children.—The Sarah Morris Hospital for Children, endowed with $300,000 given by the executors of the

late Mrs. Nelson Morris to the president of Michael Reese Hospital, soon will be under construction. The institution will be one of the largest for this purpose in the middle west and will be ready for occupancy in a little more than a year.

MARYLAND

Incinerating Plant.—A model incinerating plant was opened October 17, in Baltimore, by the health department. A fumigation plant will soon be in operation in the same building.

Hospital Notes.—The Sisters of Mercy of Mercy Hospital, Baltimore, have purchased the three-story building adjoining the new addition to the hospital for $10,000. It is understood that this building will be torn down to give more light and air to the hospital.——The hospital committee of the Havre-de-Grace Hospital has purchased a residence in that town for $10,500, situated on a lot 300 by 200 feet.

Personal.—Dr. G. C. Keller, Grantsville, has been elected president of the First State Bank at that place.——Dr. J. Wesley Cole, Baltimore, is reported convalescent after typhoid fever.——Dr. William L. Smith, Sherwood, who has been seriously ill with pneumonia, is reported to be improving.——Dr. Richard S. Hill, Upper Marlboro, has been appointed a member of the faculty of the Maryland Agriculture College, and Dr. William A. Griffith has been appointed attending physician.——Dr. Christopher Johnston, Baltimore, has received a bequest of $500 by the will of Miss Elizabeth M. Morris.

MASSACHUSETTS

Medical Club Meets.—The Brookfield Medical Club held its regular meeting October 19, and elected the following officers: president, Dr. William J. Heffner, Gilbertville; vice-president, Dr. Ephraim W. Norwood, Spencer; secretary-treasurer, Dr. Idelle L. Edmands, North Brookfield; and executive committee, Drs. Harry D. Gaffney, Ware; Charles A. Deland, Warren, and William F. Hayward, East Brookfield.

Hospitals Enlarged.—Mayor Fitzgerald of Boston has approved the order passed by the city council authorizing the purchase of the Robert Treat Paine property on Southampton Street for the south department of the Boston City Hospital. ——The health authorities of Chelsea have opened a tuberculosis clinic in the Frost Hospital, which is to be open every Wednesday afternoon.——Governor Eben S. Draper announces that on account of the overcrowded condition of the Milford Hospital, which he gave to the town several years ago, he will erect a large addition to the institution.

MICHIGAN

County Tuberculosis Hospitals.—The supervisors of Chippewa County have voted an appropriation of $1,700 for the establishment of a county tuberculosis hospital.——The board of supervisors of Wexford County have voted to build a hospital for consumptives on the county farm.

Tuberculosis Societies Conflict.—The Detroit Society for the Study and Prevention of Tuberculosis has split into two factions and a dispute as to which is legal successor of the old society and so entitled to the funds has been brought into court. Judge Hosmer has handed down the opinion that the recently incorporated faction has no right to the name, books, or the $13,500 collected on last tag day.

Order Jails Closed.—As the result of the inspection made by Sanitary Expert T. S. Ainge, of the State Board of Health, the secretary of the board issued an order October 16 closing the jails in Manistee and Lake Counties before October 24, and ordering the authorities of Cheboygan County to clean its county jail and to limit the number of prisoners, and directing the officials of Grand Traverse County to close its present county infirmary.

Social Purity Campaign.—A mammoth campaign for the extension of social purity among children began in Detroit, November 4, by the combination of five influential city organizations. Meetings are being held in schools, factories and theaters. Dr. Rollin H. Stevens is chairman of the citizens' committee for the promotion of social purity. Among the prominent physicians of Detroit taking active interest in this crusade are Adolph G. Studer, David Inglis, Mary T. Stevens and Guy L. Kiefer.

Personal.—Dr. James H. Sanderson, Detroit, returned October 31 from a trip to Havana and the interior of Cuba.——Dr. George C. Young, Jackson, fell four stories down an elevator shaft, November 1, suffering a compound fracture of the skull and internal injuries.——Dr. Dugald A. Galbraith, Lansing, has been elected physician of Ingham County.——Dr. Martha L. Longstreet, Saginaw, was injured in a collision between her buggy and an automobile, October 27.——Dr. Flemming Carrow, Detroit, denies the published report that he is about to retire from practice.

Society Meetings.—The annual meeting of the Genesee County Medical Society was held in Flint, October 25. Dr. Noah Bates was elected president; Dr. Mark S. Knapp, vice-president; Dr. Clifford P. Clark, secretary-treasurer; Dr. Frederick B. Miner, assistant secretary-teasurer; Dr. Herbert E. Randall, delegate to the state medical society; Dr. John W. Handy, alternate, all of Flint; and Dr. Abram J. Goodfellow, member of the board of directors.——At the meeting of the Owosso City Physicians' Association, October 24, Dr. Jesse O. Parker was elected president; Dr. Dryden H. Lamb, vice-president, and Dr. W. A. Watts, secretary-treasurer.

Certified Milk.—Lansing recently passed an ordinance creating a milk commission consisting of five licensed physicians "to supervise the production of milk intended for sick-room purposes, infant feeding, and for use in hospitals" in the city. This commission is given power to enter into agreements with dairymen for the production of "certified milk" for the purposes above named and to prescribe the conditions under which such milk is to be produced and distributed, the tests to which it shall conform, and the price at which it shall be sold. The standard shall not be below that established by the American Association of Milk Commissions, but the price may be below that provided by the local commission. Each container containing the certified milk shall bear the seal of the commission, with the date and time of its production. This should insure a safe milk for the purposes named, and if largely used should diminish the death rate from infantile diseases in Lansing. It also is an excellent example for other cities to follow.

NEW YORK

Contract for Sanatorium Awarded.—Plans have been accepted and contracts awarded for the construction of the J. N. Adam Memorial Municipal Hospital for Tuberculosis, Perrysburgh. The initial cost of the hospital will be about $250,000, and the ultimate accommodation is expected to be for 150 patients.

Automobile Injuries.—Dr. Charles Bernstein, superintendent of the State Custodial Asylum at Rome, met with an automobile accident on October 29 and is in a grave condition.——Dr. Robert Irvine, for many years prison physician at Sing Sing, was found unconscious in the road near Ossining as the result of an automobile accident.

New York Alumni of Baltimore College Meet.—At the first annual banquet of the New York State Alumni of the Baltimore Medical College, held in Syracuse, October 19, the following officers were elected: Dr. Milton E. Gregg, Elbridge, president; Dr. Morley B. Lewis, Sag Harbor, vice-president; Dr. William J. R. McFarland, Syracuse, secretary-treasurer; and Drs. William D. Peckham, and Leon P. Jankiewicz, Utica, and the vice-president and secretary, as members of the executive committee.

NORTH CAROLINA

Case Against Physician Dismissed.—The warrant against Dr. Bartlett J. Witherspoon, Charlotte, charged with issuing a prescription for liquor to one not a *bona fide* patient under his care, was dismissed by the recorder, October 8.

Personal.—Dr. William W. McKenzie, Salisbury, a member of the State Board of Medical Examiners, after having been incapacitated for the past 8 months as the result of an automobile accident, has regained his health and resumed practice.——Dr. David A. Stanton, High Point, secretary of the Medical Society of the State of North Carolina, has been nominated for the legislature by the republican party of Guilford County.——Dr. Charles L. Minor, Asheville, has returned from a trip abroad.

PENNSYLVANIA

Personal.—Dr. George W. Burket, Tyrone, has been added to the staff of Mercy Hospital, Altoona.——Dr. John W. Goodsell, New Kensington, has received a letter from the president of the Peary Arctic Club, New York City, commending the physician for his work during the Peary expedition and enclosing a check as a substantial evidence of the appreciation of the club.——On October 31, Governor Stuart appointed Dr. Americus R. Allen, Carlisle, a member of the Board of Medical Examiners, representing the Medical Society of Pennsylvania, vice Dr. James B. Walker, Philadelphia, deceased.

Philadelphia

Personal.—Dr. Ottavio Monticelli has recently returned from a trip abroad in which he made a study of the European hospital systems.——Dr. Charles M. Burk was operated on in the German Hospital, October 26, for abdominal disease.——Dr. Harry C. Deaver has been appointed surgeon in chief to the Kensington Hospital for women.——Dr. S. Weir Mitchell has been elected president of the St. Andrew Society.

Home for Convalescent Workers.—Having terminated a successful summer season, in which it cared for more than 6,000 mothers and children, the Country Nursery of Germantown has opened for the winter as a Convalescent Home for Wage Earners. It will care for working persons who have been discharged from hospitals, but are unable to return to their employment.

Pneumonia Campaign Planned.—With a view to reducing the mortality from pneumonia, Dr. Joseph S. Neff, director of health and charities, is planning an educational campaign on the subject of ventilation. Scientific tests of the impurity of the air in places over which the department has any jurisdiction will be made and the results announced. Tests will be made in theaters, large stores, schoolrooms and other places where people congregate.

Census of Defective Children.—The Board of Education has just completed a census of defective children, which shows that there are 573 defective children unable to attend school, said to be about 50 per cent. of the actual number in the city, owing to the reluctance of parents to tell of afflictions. The board is advocating a special institution for the care and education of such children. An analysis of the report shows that the largest number of defectives are crippled, the number of cripples being 167.

Graduate Courses in Internal Medicine.—During the period from September to May, 1910-11, six courses in internal medicine, each of six weeks' duration, will be given at the Philadelphia General Hospital. The series of classes begins work September 26, November 7, December 19, January 30, March 13 and April 24. The courses will cover various phases of internal medicine as best illustrated by the cases in the ward in a given period, and will take the form of a series of informal clinical conferences rather than a study of diseases of any one organ. Those interested should apply at 1708 Locust Street. No fee will be charged and the membership in the classes will be limited to those willing to attend regularly and to benefit in full measure from the wealth of clinical and laboratory material.

Jail for Rotten Egg Sellers.—Judge Barrett, November 3, not only imposed the first two jail sentences in "rots and spots" cases made under the pure food law passed by the last legislature, but he also warned all those engaged in the rotten egg business that if convicted they should not expect mercy from the courts. T. T. Ellis & Son were convicted a week ago and Abraham Staples, November 3. Judge Barrett is said to have imposed a fine of $500 for T. T. Ellis and a sentence of three months in jail for George Ellis, the son, and of three months in jail for Abraham Staples. Other sentences in pure food cases in Judge Barrett's court were: William Snowden, who pleaded guilty to selling oleo for butter, $100 and costs; Morris Levin, who pleaded guilty to selling butter containing foreign fat and excess moisture, $60 and costs, and Louis Feingold, who pleaded guilty of selling cake colored with yellow coal tar dye, $60 and costs.

VIRGINIA

Health Officers Organize.—The Virginia Health Officers' Association, composed of county health officers of the state, was organized in Norfolk, October 27. Dr. Lucien Lofton, North Emporia, acting as temporary chairman, and Dr. Robert E. Booker, Lottsburg, as secretary. The following officers were elected: president, Dr. Rawley W. Martin, Lynchburg; vice-presidents, Drs. Ernest C. Levy, Richmond, and Jesse M. Shackelford, Martinsville, and treasurer, Dr. Lucien Lofton, North Emporia.

State Medical Society Meeting.—The forty-first annual meeting of the Medical Society of Virginia was held at Norfolk, October 25-28, and the following officers were elected: president, Dr. Otho C. Wright, Jarratt; vice-presidents, Drs. Joseph F. Buxton, Newport News, Robert Wiley, Salem, and McGuire Newton, Richmond; secretary, Dr. Landon B. Edwards, Richmond (reelected); and treasurer, Dr. Robert M. Slaughter, Theological Seminary (reelected). Richmond was selected as place of meeting for next year.

WISCONSIN

Tuberculosis Campaign.—The Milwaukee Central Council of Tuberculosis has begun a thorough placarding campaign directed at the spitting evil, and 6,000 placards are being distributed in factories and workshops in Milwaukee.

Physician Wins Suit.—The case of Martin V. Murray, Aikins, against Drs. E. J. and Michael J. Donohue and Fred V. Watson, Antigo, for $10,000, in which malpractice was charged, was dismissed October 5, in the circuit court at Rhinelander, the court nonsuiting the plaintiff because he was unable to show that the defendants had been negligent or guilty of malpractice in any way.

GENERAL NEWS

Trachoma in School Children.—An extensive epidemic of trachoma has been discovered in school children of Santiago de Las Vegas, Havana Province, Cuba, where about 1,000 cases have been observed.

Yellow Fever in Hawaii.—Press dispatches announce the first case of yellow fever ever reported or known to have been present in Honolulu was discovered aboard a Japanese cruiser which arrived in port from Manzanillo, Mexico, October 30. The warship is being held in quarantine.

Glanders in Cuba.—A focus of glanders has been found in the large stables of the Rural Guards, at Santiago de Cuba. Six horses were killed on account of the disease, forty-six others suspected of having glanders were isolated, and 177 were vaccinated with mallein to protect them from infection.

Address Translated.—The address of Surgeon-General Walter Wyman, U. S. P. H. and M. H. Service, on "The Present Organization and Work for the Protection of the People in the United States," delivered at the meeting of the American Public Health Association, at Milwaukee, has been translated into Spanish by Dr. A. M. Fernandez de Ybarra, Havana, and published in the *Diario de la Marina*.

Railway Surgeons Organize.—The Association of Railroad Surgeons of the Southwest was organized at the session of the International Medical Association of Mexico, October 28, with the following officers: president, Dr. George K. Angle, Silver City, N. Mex.; vice-presidents, Drs. Carl H. Lund, Douglas, Ariz., John W. Colbert, Albuquerque, N. Mex., Robert L. Ramey, El Paso, Texas, and Carlos E. Hust, Santa Barbara, Mexico, and secretary-treasurer, Dr. William L. Brown, El Paso.

Railway Surgeons' Meeting.—The twentieth annual meeting of the New York and New England Association of Railway Surgeons was held in New York City, November 3 and 4, under the presidency of Dr. Leroy M. Bingham, Burlington, Vt. The following officers were elected: president, Dr. Frederick A. Goodwin, Binghamton, N. Y.; vice-presidents, Drs. Walter Lathrop, Hazelton, Pa., and John W. Le Seur, Batavia, N. Y.; corresponding secretary, Dr. George Chaffee, Brooklyn; recording secretary, Dr. Clifford A. Pease, Burlington, Vt., and treasurer, Dr. James K. Stockwell, Oswego, N. Y. The time and place of the next meeting were left to the executive committee.

Report of the Surgeon-General.—The annual report of the Surgeon-General of the Army shows that during the fiscal year, eighteen officers died and 115.7 were constantly noneffective from all causes, the rate being a little higher than for 1908. During the year 51 officers were retired on account of disability, equivalent to an annual rate of 11.91 per 1,000. The constantly noneffective rate among enlisted men was 41.48 per 1,000. During the year 370 deaths occurred, 228 of which were from disease. Of the deaths of enlisted men, 25 were from suicide by gunshot wound, 2 were killed in action, 28 by drowning, and 11 by acute poisoning. There were no deaths from sunstroke, freezing, or lightning stroke. The admission rate for venereal disease was 196.99 as compared with 194.13 for the preceding year, showing that the campaign of education in this regard is not yet showing results. The admission for tuberculosis was 4.70, a little higher than for the preceding year. The admission rate for malarial infection has decreased from 46.33 in 1909 to 38.42 this year. During the year there were 173 cases of typhoid fever with 16 deaths. Since March, 1909, 10,941 persons have been vaccinated against typhoid fever. Cerebrospinal meningitis was responsible for 7 deaths out of 13 cases which were reported. The admission rate for tuberculosis was higher than in any foreign army excepting the Spanish, French and Dutch, which have rates of 5.92, 7.44, and 5.32 respectively. The surgeon-general requests the favorable consideration of the Secretary of War for the new bill organizing a corps of dental surgeons.

MANILA LETTER

(From Our Regular Correspondent)

MANILA, Oct. 4, 1910.

Personal

Mr. Moses T. Clegg has resigned from the Bureau of Science to accept the assistant directorship of the leper colony at Honolulu, for which place he has just sailed. For several years Mr. Clegg has been interested in leprosy and has recently succeeded in cultivating the leprosy bacillus on artificial media.

The Medical and Pharmaceutical Students' Strike Off

The strike of the students of medicine and pharmacy of Santo Tomas University, which threatened to leave the Philippine Islands with only one medical school, has been declared at an end. About three months ago an order was received here from the Vatican at Rome for the transfer of the University of Santo Tomas from the Dominican to the Jesuit order. A large proportion of the students protested and the students of medicine and pharmacy asked that some assurance be given them of the continuation of these departments till the present classes graduate. These requests were lightly received and the university authorities declared that it would be impossible to continue the departments of medicine and pharmacy for more than about one year, but urged these professional students to remain in school. A strike of the medical and pharmacy students was declared, which was followed by a sympathetic strike (of two weeks' duration) of practically the entire student body. Acting on the advice from their representative in Rome, the students of medicine and pharmacy recently have returned to their classes after an absence of two months. The Vatican has promised to continue these professions indefinitely. The following cablegram was received: "Tell students of Santo Tomas that the university will continue forever in all its departments. A papal decree to this effect will be issued in November. This statement is made with due authority." It looks like a victory for the students.

Extermination of the Mosquito

Manila and its people are just embarking upon another crusade in preventive medicine. This time it is the war on the mosquito. Betwixt the popular agitations for sound meat, fresh eggs, sanitary barrios, pure water, extermination of the mosquito, prevention of beriberi, reduction of infant mortality, and the cure and prevention of tuberculosis, the medical man has, of late, scarcely been able to collect his thoughts fast enough to give expert advice on so many subjects. But good account has been given in several of these movements. This is notably true of the antituberculosis movement.

The extermination of the mosquito, however, has perhaps less to do with the health of Manila than its extermination from most other places, there being little malaria and no yellow fever in Manila or in the Philippine Islands. The vital statistics of the Bureau of Health for the second quarter, 1910, show, in a total of 1,962 deaths, 25 deaths due to "intermittent fever and malarial cachexia" and 2 deaths from "malarial cachexia." This relatively small amount of malaria, at first sight, is a little difficult to understand. The topography of the country and the climate are those which we usually associate with a marked prevalence of malaria, yet most Americans on coming to the islands, whether to Manila or the provinces, seldom have occasion to take their brown bottle of sugar-coated quinin tablets from the trunk. Despite the fact that the valley surrounding Manila is to a great extent given up to marshy rice-paddies and fish-ponds, the anopheles mosquito is decidedly in the minority. The entomologist of the Bureau of Science tells us that this genus of mosquito is represented in the Philippine Islands by seventeen species but that none of them flourishes. The reason for this is not clear, but the propagation of the anopheles seems to be associated with several forms of green algæ which are scarce in these islands.

The above is in marked contrast to the situation in most tropical countries where the rains are as heavy as they are here. Particularly is this the case in British India, where for the past several years the incidence of malaria has shown no tendency to decrease. Indeed, during the fiscal year 1909, the number of cases of malaria has shown a decided increase. This has brought the attention of the medical profession and the government to the gravity of the situation. In a total of 8,653,007 deaths, registered in the annual report of the Sanitary Commissioner, something over two million are estimated as due to malaria. This occasioned the Imperial Malarial Conference which was held at Simla in October of last year; numerous resolutions and recommendations were adopted looking toward the alleviation of the malady. These included a scheme and schedule of treatment for those already infected, an outline of a campaign for the extermination of the anopheles mosquito, prophylaxis through general sanitation and quinin, free distribution of quinin (only in severe epidemics) and a general plan of education of the masses of the people in relation to the spread and cure of the disease. The great poverty of the people and the vast amount of marsh land, however, would seem to make the campaign almost a hopeless one. Judging from the reports of the Imperial Malarial Conference and from the annual report of the Sanitary Commissioner of the Government of India, the malaria situation in British India is well depicted in the opening address of His Excellency the Viceroy and Governor-General of India at Simla in October, 1909, from which the following is taken:

"Malaria has been a terrible scourge in many parts of India. I have no wish to weary you with a repetition of statistics which are no doubt well known to all of you, but speaking generally, the number of deaths ascribed to fever in the whole of India has varied during the last ten years from about four millions to four and a half millions per annum; and though it is admitted that only a portion of these are due to malaria and though we cannot say with precision what that proportion is, it has been estimated to be from one-fourth to one-fifth of the total number of deaths entered in our returns as due to fever. We may therefore take it that malaria is answerable in an ordinary season for about a million deaths in the year. But last year the number of deaths ascribed to fever was one million more than the normal, and there are grounds for belief that this additional million was due to malaria, and not to the other diseases which go to swell the total returns under the heading of fever. We may therefore assume that the number of deaths from malaria in India are ordinarily one million, but that in an exceptional season they have risen to two millions. If we admit such a conclusion, as I am afraid we must, we cannot disguise from ourselves the magnitude of the evil with which we have to deal. And the loss by death is by no means the whole of that evil. There are the cases of those who contract the disease, but do not die, and the ratio of the number of such cases to the number of deaths is very high. I believe one estimate has placed it as high as 133 cases of sickness to one death. If therefore we take it only in the proportion of 50 to 1, we have to admit one hundred million cases of fever for the last year which were not fatal. It is appalling to think of the suffering and economic loss that such conditions imply—not only direct and immediate loss by the death and sickness of adults, but potential loss in the case of the children. And yet much of this wide-spread suffering scientists assure us is preventable.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Oct. 29, 1910.

Small-Pox Infection in Cotton

From time to time sporadic cases of small-pox have occurred among the operatives in Lancashire. This has suggested the idea that the cotton was the source of infection. At the recent International Conference on Diseases of Occupation held at Brussels, Dr. Corbin, health officer for Stockport, raised the question whether such cases did not come under the head of "accidental injuries" of the Workmen's Compensation Act. Of course there would be great difficulty in proving the source of infection in an individual case. However, since the possibility of cotton being the source of infection was first mooted, a chain of evidence connecting cases of small-pox in Lancashire with cases among the native gatherers of Egypt and the United States has been followed out very completely, and every care is taken to guard against those suffering from the disease having anything to do with cotton. Dr. Corbin points out that even if a native suffering from the disease gathered the cotton the probability of the conveyance of infection is very slight. In the first place there must be considerable attenuation of the virus before the material reaches the hands of the workers in England. Further, there would be little chance of infection unless the virus were inhaled or carried directly to the mouth. Operatives engaged in "piecing" use the saliva only occasionally as a means of facilitating the process and the possibility of the strands requiring to be pieced just at the point where the virus was is very small. Finally, the operator is usually protected by vaccination against infection.

Damages for Nervous Shock

As stated in previous letters, the Workmen's Compensation Act has been drawn in such a wide and all-embracing manner as to include under the term "accident" everything which can befall a workman in the course of his employment, even though it has only the most remote connection with his work. Introduced by a liberal government with the most benign intentions toward labor and with a strong labor party on its flank making the utmost demands, the act may be described as passed solely in the interests of labor. Compensation has been successfully claimed for the death of a workman from the bursting of an aneurism while making only a slight effort in tightening a screw. The latest form of injury to be recognized under the term accident is nervous shock. In a recent case the judge ruled that in assessing the amount of compensation the nervous and mental as well as the physical condition of the injured workman must be considered in estimating the extent of his recovery and consequent earning capacity. Still more recently mere nervous shock causing no physical injury has been held to be an accident. A collier, aged 46, while working heard a cry for help from a fellow workman. He ran to the latter and found him lying on the ground, bleeding from the head, ears and eyes, having been knocked down by a fallen timber prop and coal. He picked up the injured man and with assistance carried him away. The man died in quarter of an hour. After the accident the collier suffered from nervous shock which incapacitated him from work at the coal face. The Court of Appeal has decided that the collier was the victim of an accident arising out of his employment and that he was entitled to compensation. The Master of the Rolls (the presiding judge) said: "I think the decisions of this court do show that when a man in the course of his employment sustains a nervous shock producing physiologic injury, not a mere emotional impulse, he meets accident arising out of and in the course of his employment. I can see no real difference in principle, when once you get rid of the danger of malingering, between what happened to the man who was killed and in this case in which physiologic damage was done."

Fatal Cycling Accident to a Doctor

Fatal cycling accidents to doctors unfortunately occur from time to time. Not long ago a leading physician of Birmingham, Professor Foxwell, was killed while descending a hill on his cycle. Now the death is reported from Ireland of Dr. P. J. Smyth of Stamullen, who was cycling home in the dark after attending a call. Apparently he mistook the way at the corner of a by-road and ran into a wall. He sustained a fracture-dislocation of the neck which was instantly fatal.

The Crippen Case

The most sensational murder trial of this generation has no doubt been fully reported in the American lay press, but probably its medical aspects have not been completely dealt with, and a note on them may be of interest. Evidence was given that Mrs. Crippen had a scar in the middle line of the abdomen about 6 inches long below the umbilicus. Remains of a human adult, probably in early or middle life, consisting of heart, lungs, liver, kidneys, stomach and intestines and portions of skin and muscles, mixed with quicklime and remarkably free from putrefaction, were found beneath the floor of the coal-cellar of Crippen's house. A considerable amount of adipocere had been formed. The medical experts for the prosecution—Mr. Pepper, Dr. Marshall and Dr. Willcox—gave evidence that the lime would retard putrefaction, but accelerate the formation of adipocere, and that the remains must have been buried from four to eight months. Among the pieces of skin was one 7 by 6 inches, with a piece of subjacent muscle 4 inches long, which corresponded exactly to the left rectus abdominis. On the left portion of the skin were hairs arranged in a transverse horizontal line and corresponding to human pubic hairs. These and other characters led to the conclusion that the skin came from the lower part of the anterior abdominal wall. On the anterior surface of the skin extending from half an inch above the line of hairs was a triangular mark with the base below, which, Mr. Pepper emphatically stated, was an old stretched scar. For the defense Dr. Turnbull and Dr. Wall of the London Hospital said that the mark might be due to folding of skin and subsequent pressure. But folding would not account for the triangular appearance of the scar, which was presumably due to stretching. The portion described as a scar was microscopically examined by Dr. Spilsbury of St. Mary's Hospital, who confirmed this view. All the medical evidence was that there were no anatomic signs of sex in the remains. The removal of the whole of the viscera of chest and abdomen, excepting the pelvic viscera, was considered to indicate some anatomic knowledge.

In the viscera Dr. Willcox found an alkaloid which produced complete paralysis of the pupil for several days in cats. By the Stas-Otto process he obtained a mydriatic alkaloid which gave a purple violet color by Vitali's test, which he held to show that a vegetable mydriatic alkaloid was present. By purification he found that the alkaloid was not crystalline, but gummy, and with bromid in hydrobromic acid gave brown spheres. He therefore concluded that hyoscin was present, the quantities found in the various viscera amounting in all to two-fifths of a grain of hyoscin hydrobromid. The lungs contained only the merest trace—much less than the other organs. The distribution pointed conclusively to administration by the mouth and excluded the possibility of the alkaloid being due to putrefaction, as the best-preserved organs yielded the greatest percentage. It was proved that in January Crippen bought 5 grains of hyoscin hydrobromid, which he then alleged was for the purpose of making up preparations for Munyon, and, at the trial, for homeopathic preparations of his own. For the defense Mr. Winter Blyth, a well-known toxicologist, was called, and disputed the reliability of the test for hyoscin. But it was pointed out to him that he had given a contrary opinion in his well-known book on poisons. He stated, however, that on looking up the literature he was inclined to recant that opinion. A most damnatory piece of evidence was the finding with the remains of a pajama jacket identical in pattern with pajama trousers admitted to belong to the prisoner. Moreover, it was proved that these trousers were bought subsequent to 1906, and must therefore have been put beneath the cellar during the time of the prisoner's tenancy of his house.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Oct. 28, 1910.

Black-Listing of Physicians by a Medical Society.

The Syndicat des médécins de Toulouse came into conflict with the Fédération des sociétés de secours mutuels in regard to the contracts with important societies. Three physicians accepted positions with one of these societies, replacing physicians who had withdrawn. The *syndicat* put these three physicians on the "index" or black list; that is to say, it forbade all of the members of the *syndicat* to have any professional relations with those physicians under penalty of a fine of from $4 to $20 (20 to 100 francs), doubled in case of a second offense. One of the black-listed physicians entered suit against the president and secretary of the *syndicat* before the civil court of Toulouse for $20,000 damages (100,000 francs). The court sustained the *syndicat* on the ground that "the defendants were acting with no other motive than to prevent, by a useful, necessary and legitimate measure, defection in the ranks of physicians and to sustain the moral authority of the *syndicats*, guardians of professional rules."

Death of Dr. Lancereaux

Dr. Etienne Lancereaux, former *agrégé* professor of the Paris medical college, has just died, aged 85. He became a doctor of medicine in 1862, physician of the hospitals in 1869, and *agrégé* in 1872. He was elected a member of the Académie de médécine in 1877, in the section of pathologic anatomy, and was named president of that association in 1903. Dr. Lancereaux's scientific work is considerable. He published lessons on clinical medicine which are highly valued, but the greater part of his work consists of special researches into pathologic anatomy, especially that of syphilis and intoxications, particularly alcoholic intoxication. His studies on the lesions of the liver produced by the abuse of wine have been much noticed, although Dr. Lancereaux's opinion has not been unanimously accepted by pathologists. Lancereaux thought that from the point of view of the rôle of alcohol in the etiology of alterations of the liver, it was necessary to make distinctions among the various alcoholic drinks, which he classified from this point of view in three groups: (1) cider and beer; (2) wine; (3) alcohols, especially from grain, potatoes, molasses and beets. He considered the drinks of the first class incapable of producing alcoholic lesions, and as being without harmful action on the liver. On the contrary, wine, containing a much larger proportion of alcohol, tannin, tartaric acid and calcium salts, he thought, exerted a specific action on the interstitial tissue of the liver; and its immoderate use provoked the atrophic cirrhosis of Laennec. As for alcohols

from grain and beets, they act especially on the nervous system. Their action on the liver is undeniable, but it manifests itself principally by an alteration of the hepatic cellule, contrary to wine, which irritates especially the conjunctivo-vascular stroma. Therefore, most fatty cirrhoses are caused by abuses of these varieties of alcohol.

Dr. Lancereaux published many works, especially an "Atlas of Pathologic Anatomy" (1871), a "Treatise on Herpetism" (1883), and a "Treatise on the Diseases of the Liver and the Pancreas" (1899). In spite of his advanced age he was always very active, and had recently published a "Treatise on Gout," and was making a series of reports to the Académie de médécine on the treatment of aneurisms.

Fire at Toulouse Medical College

Fire at the College of Medicine and Pharmacy of Toulouse, caused by a broken electric wire on the roof, did $200,000 damage. The whole library was destroyed. As the fire spared most of the amphitheaters and laboratories, it is hoped that the college may be reopened at the date set, November 3.

Vacation Colonies

Although entirely unknown in France 10 years ago, vacation colonies have undergone a considerable development lately. There are now 706 institutions of the kind. While in 1900 there were no more than 8,000 children in such colonies, in 1905 there were 26,000, and, during the summer of 1910, 72,800. Even the latter figures are unsatisfactory in comparison with the entire school population. In Paris, no more than 5 per cent. of the children who attend the municipal schools partake of the benefits of the vacation colonies, although the aid granted by the municipal council of Paris has increased in 20 years from about $9,000 (45,000 francs) in 1889 to about $45,000 in 1908. To this sum is added the contributions of twenty school funds, about $28,000, the fees of families, and various gifts. The cost of maintenance at these colonies, which was about 75 cents (3.83 francs) a day for each child during the first year for a 3-weeks' vacation, has fallen to about 57 cents (2.86 francs). The children are sent sometimes to the mountains, sometimes to the sea, sometimes merely to the country. Some institutions, like the municipal schools of Paris, have adopted the plan of placing the children collectively, while children from other parts of France have generally been placed in families. Our communal schools ordinarily give an outing of 21 days. Some consider this length of time insufficient, but the medical records of weight, height and thoracic measurements show that the child receives appreciable benefit from it; nineteen times out of twenty the thorax has increased markedly in all dimensions. In order to coordinate better the efforts of the various institutions devoted to this end, the first Congrès national des colonies de vacances was held in Paris from September 30 to October 2, taking up the questions of price and material conditions of transportation, hygiene, medical questions, etc.

Prohibition of Absinthe

The question of the prohibition of absinthe is still pending in France. The present taxes on alcoholic products, such as the 1907 surtax of about $10 (50 francs) on absinthe and similar products, are by no means prohibitive. They are purely fiscal measures with no hygienic purpose. Bills intended to further the campaign against absinthe have been numerous within the last 10 years, but none has been adopted. Most of the bills have merely demanded the limitation of the number of wine shops. This would be in itself an excellent reform, since there are at present nearly 500,000 of these shops, 33,000 in Paris alone. Switzerland meanwhile has absolutely prohibited absinthe in all its territory. The federal assembly, following a referendum, has passed a law which comes into effect on October 7, and which prohibits in the whole extent of the Helvetian confederation, the manufacture, the importation, the transportation and the storing for sale of the drink known as absinthe and all imitations thereof. The use of the absinthe plant as a remedy is permitted, likewise the use of the pharmaceutic products made from this plant, but the cantons are to see that these products are used only for medicinal purposes.

Mortality in the Army

According to *France militaire*, the mortality of the army has increased from 3.14 per 1,000 in 1905 to 4.05 per 1,000 in 1908. The soldiers of the first year are those who pay the heaviest tribute.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Oct. 20, 1910.

Personal

Professor Gerhardt of Basel, son of the distinguished clinician, has been nominated for director of the Marburg medical clinic as the successor of Professor Brauer who, as already announced, has been called to the position of director of the Hamburg-Eppendorf hospital.

Professor Forster, director of the hygienic institute at Strasburg, died October 12, aged 68. He had filled the chair of hygiene in Strasburg since 1896. He was a distinguished pupil of Pettenkofer and Voit. In 1874 he joined the faculty at Munich, in 1877 he became professor of hygiene at the veterinary college at that place, in 1878 he was called to Amsterdam as director of the hygienic institute. His works belong not only to the field of hygiene but also that of nutrition. He demonstrated that marine phosphorescent phenomena are produced by bacteria. He took a prominent part in the campaign against typhoid, which was unusually widespread in Alsace and Lorraine. Together with Pettenkofer he founded the *Archiv für Hygiene*.

Professor H. Fischer, formerly director of the surgical clinic at Breslau, celebrated his 80th birthday October 14.

Memorial for Robert Koch

As already announced the general memorial service for Robert Koch will occur December 11, on which day Robert Koch would have been 67 years old. It will be held in the new university hall in which the centennial jubilee has been held. Among the invited participants will be all the officials with whom Robert Koch had official relations. The memorial address will be delivered by Privy Councillor Gaffky. In addition only brief remarks from the domestic and foreign delegates are provided for.

The University Centennial

Your readers are already acquainted through the daily press with the ceremonies that have taken place in connection with the centennial of the Berlin university. The medical faculty nominated a number of persons for the honorary title of doctor, who for the most part had very slight if any relations to medicine, as for instance, a renowned composer, on the theory that his compositions serve to refresh the spirits of the sick. Such an honor might be looked on as ridiculous if it were not in accordance with an old custom to distinguish an honored man on such a ceremonial occasion by the bestowal of an academic degree. The honorary promotion which the philosophical faculty has bestowed on Professor Ziehen and Surgeon-General Kern is founded on real worth, as both investigators have published valuable treatises in the field of psychology and philosophy. The director of the Berlin skin clinic, Professor Lesser, was on the same occasion appointed as a regular honorary professor.

International Congress for the Care of the Insane

At this congress the following resolutions of general interest were passed. First, a motion of Kraepelin (Munich) to secure by means of statistics of population of a limited district, extending over decades, the necessary data to answer the question of the increase of mental and nervous diseases and the social phenomena connected with them. Second, a motion of Schüle (Illenau) to discuss at the next congress the question of the statistical treatment of hereditary relations and to appoint Professor Tamburini (of Rome) and Rüdin (of Munich) to report on the question. Third, a motion of Morel (of Ghent) and Ferrari (of Bologna) to secure uniform international education of attendants for the insane and to determine the minimum requirements, and further to secure in the national publications concerted agitation for furthering the study of the origin and prevention of mental diseases.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, Oct. 26, 1910.

An Accident in a Laboratory and its Consequences

Some time ago, Dr. Luksch, of the Czernowitz laboratory for examination of food, made experiments with malleus bacilli which, as he believed, had been killed. While they were in the centrifuge, one of the glass tubes burst, and the contents were scattered over the room. Two assistants and Dr. Luksch himself, who at once proceeded to put the apparatus in order, became infected with the disease, and of the three

men only Dr. Luksch escaped death, the other two succumbing after a short illness, a very short incubation period having intervened. Dr. Luksch was afterward accused of negligence and had to fight in court for his reputation and liberty. Professor Weichselbaum, who appeared as an expert, declared that the accused was entitled to regard the bacilli as dead, because the notes of the experiment proved that a 5 per cent. phenol solution was allowed to act for an hour on the contents of the centrifuge glass tubes. Also the behavior of the unlucky scientist after the accident proved that he was convinced of the innocuousness of the spilled liquid. He played with his babies there and shared the rooms with his family. The explanation of the fatal result lies in the fact that sometimes the disinfectant is not strong enough, although all scientific publications dealing with malleus show that a 5 per cent. solution has a safe bactericidal action. Dr. Luksch was exonerated and the case was dismissed. The incident showed that incalculable occurrences must be taken into consideration in all such experiments. The accident, which gave rise to very much public comment, has had the consequence that experiments with highly virulent micro-organisms are now restricted to special institutes under extraordinary precautions.

A New Water-Supply in Vienna

The constantly and quickly increasing population of Vienna requires enormous quantities of pure drinking-water, and the existing supply of the liquid has been severely taxed, especially a year or two ago, when a continuous absence of rainfall for several months in the district where the water was drawn caused an actual water famine in Vienna. The population of Vienna numbered 800,000 in 1892, and 1,500,000 in 1900, owing to the union of several suburbs with the city. Even at that time Vienna boasted of the best water among all European cities. It was brought in grand aqueducts and subterranean pipes from the district of Schneeberg, a mountain group some 6,000 feet high, 85 miles to the south of the city. The introduction of this water in 1872 at once put a stop to all gastro-intestinal infective disease; typhoid fever in particular, formerly a constant occurrence in Vienna hospitals, was nearly suppressed. The quantity of water was calculated to be sufficient for a million and a half of people; but the increase of use of water called for an earlier search for a new supply. This has been found a little to the northwest of the first well district. The new water is also derived from mountainous districts. There are six powerful wells in the Austro-Styrian Alps, giving a daily quantity of 200,000 tons of water, even in the dry season of the year. The water has a low degree of hardness. It comes from the central group of the Alps, where only little lime and chalk is present, more granite and gneiss, and its temperature is constant all the year round, showing at the common reservoir 120 miles from Vienna 6° C. (43° F.) while in Vienna itself it has risen to 7° or 10° C. (45° or 50° F.) according to the season of the year. The cost of the new supply is estimated at 100,000,000 kronen ($20,000,000). Twenty per cent. of all the canals are open; the rest are protected from pollution, being either underground or running in special huge iron pipes or cement pipes. In order to supply the highest points of our hill-climbing city, six reservoirs have been erected, of which only one requires water-lifting machines. The distributors are at the same time also pressure regulators, for the water arrives under a pressure sufficient to reach parts of the city situated 1,000 feet above sea level. From the medical point of view, the nature and quality of the water are first-class. It is practically germ-free; it is soft enough to give splendid cosmetic effect. It will have to be determined by experience, however, whether it has also the effect of causing hypertrophy of the thyroid gland, which has been put to the credit of the water used hitherto in Vienna. The fact is undeniable that since 1873 the number of goiters in this city has increased 200 per cent. and popular belief always pointed to the water as a cause. Modern researches of Swiss investigators seem to justify this belief, for water coming from certain parts of the Alps proved capable of producing such a condition in dogs. This water came from lime districts, like the old Vienna water. The quantity of water at disposal in this city after the opening of the new waterworks will be sufficient for 4,000,000 people at a liberal daily allowance (125 liters or 250 pints) per head. It is intended to distribute the new water on December 2, the jubilee of the Austrian Emperor. At any rate, until the year 1940 we need not fear another water famine, for at that time only 3,500,000 are calculated as the population of Vienna.

Marriages

OTTO J. RABE, M.D., to Miss Mildred C. Smith, both of Chicago, October 20.

ALEXANDER AARON, M.D., to Miss Mettie Lemish, both of Philadelphia, October 16.

STEPHEN RUSHMORE, M.D., Boston, to Miss Alice Dammann, at Baltimore, October 29.

BERNAYS KENNEDY, M.D., to Mrs. Elizabeth McKeen, both of Indianapolis, October 26.

ARTHUR JOHNSON, M.D., Clanton, Ala., to Miss Mabel Hall of Owensville, Ind., October 18.

EDWIN E. GAMBEE, M.D., Chewelah, Wash., to Miss Clara Waddock of Lebanon, Ore., October 21.

R. E. FERNEYHOUGH, M.D., Warrenton, Va., to Miss Margaret Hutton, at Warrenton, October 19.

JAMES ANDERSON WORK, JR., M.D., Elkhart, Ind., to Miss Bess Middleton of St. Louis, October 29.

JESSEE ULLMAN REAVES, M.D., Mobile, Ala., and NELL LECOMPTE, M.D., Corydon, Iowa, October 19.

MILTON BYRNE LENNON, M.D., San Francisco, to Miss Aimee Marie Auzerais of San Jose, Cal., October 25.

WILLIAM WADE OLIVE, M.D., Durham, S. C., to Miss Agnes Janet Makely of Edenton, N. C., October 26.

EMILE BONNIWELL QUILLEN, M.D., Wilmington, N. C., to Miss Lelia Griffith Owings, at Baltimore, October 18.

ROBERT P. CARR, M.D., Norton, Va., to Miss Bessie McClung, formerly of Botetourt County, Va., November 3.

HENRY WARD RANDOLPH, M.D., Richmond, Va., to Miss Agnes Rebecca Reed, at Reedville, Va., October 24.

RAYMOND A. BUTLER, M.D., Lafayette, Ind., to Miss Amy Carter of Elizabethtown, Ind., at Indianapolis, October 27.

THADDEUS GLASS PORTER, M.D., Palestine, Ark., to Miss Emma Pringle Radley of Jeffersonville, Ind., at Louisville, Ky., October 25.

Deaths

Nathaniel Pendleton Dandridge, M.D. College of Physicians and Surgeons, New York City, 1870; a member of the American Medical Association; fellow of the American Surgical Association, and member of the Cincinnati Academy of Medicine; formerly dean and professor of practice of surgery and clinical surgery in Miami Medical College; a director of the Cincinnati Hospital Board; surgeon to the Cincinnati Hospital and Episcopal Hospital for Children; died at his home, November 6, from heart disease, aged 64.

John Henry Nesbitt, M.D. College of Physicians and Surgeons, New York City, 1875; a member of the Medical Society of the State of New York, and the New York Medical and Surgical Society; of New York City; is said to have committed suicide by gunshot wound in his stateroom on board the steamship *Arabic*, October 27, while on his way to England, aged 56.

Charles C. Davidson, M.D. Jefferson Medical College, Philadelphia, 1880; a member of the Medical Society of the State of Pennsylvania; the Medical Club of Philadelphia, the Medico-Legal Society, and the Jefferson Medical College Association; a prominent specialist in orthopedic surgery; died at his home in Philadelphia, October 18, from heart disease, aged 61.

Charles Ballard Cook, M.D. Western Pennsylvania Medical College, Pittsburg, 1903; a member of the American Medical Association; resident physician at the Shenango Valley Hospital for one year; died at his home in (Carrick) Pittsburg, Pa., October 17, from pernicious anemia, aged 31.

James Gray Carr (license, years of practice, Ohio, 1896); surgeon and assistant surgeon of Ohio Volunteer Infantry during the Civil War; president of the local U. S. Board of Pension Examining Surgeons; died at his home in Coshocton, Ohio, October 21, from angina pectoris, aged 85.

Jay Stephen Stone, M.D. College of Physicians and Surgeons, New York City, 1865; a member of the Connecticut State Medical Society; a member of the board of health of New Britain and city physician in 1894; died in the Archer Home, Windsor, Conn., October 8, aged 68.

Thomas B. Lane, M.D. Medical College of Virginia, Richmond, 1860; of Port Haywood, Va.; a member of the Medical Society of Virginia; a Confederate veteran; superintendent of public schools of Mathews County; died in the Norfolk Protestant Hospital, October 19, aged 70.

LeRoy Lewis, M.D. Jefferson Medical College, Philadelphia, 1878; a member of the American Medical Association; for twenty years surgeon in charge of Lewis Hospital, Bay City, Mich.; died at his home in South Bend, Ind., October 27, from cancer of the neck, aged 55.

James Cowan, M.D. Victoria University, Medical Department, Toronto, Ont., 1861; coroner for a number of years, and for seven years a member of the legislature; a pioneer physician of Manitoba; died at his home in Portage la Prairie, Man., September 1, aged 79.

John W. Hammond, M.D. Jefferson Medical College, 1856; a member of the Ohio State Medical Association; assistant surgeon of the One Hundred and Twentieth Ohio Volunteer Infantry during the Civil War; died at his home in Wellsville, October 15, aged 79.

Astley Cooper Wright, M.D. Jefferson Medical College, 1858; a member of the Kentucky State Medical Association; formerly president of the Warren County Medical Society; died at his home in Bowling Green, October 29 from cancer of the prostate, aged 73.

Leonard M. Johnson, M.D. Albany (N. Y.) Medical College, 1855; surgeon of the Third New York Volunteer Infantry during the Civil War; a practitioner of medicine in Greene, N. Y., since the war; died at his home in that place, October 19, aged 80.

Harry B. Searles, M.D. Syracuse (N. Y.) University College of Medicine, 1904; a member of the Medical Society of the State of Pennsylvania; coroner of Wayne County; died at his home in Honesdale, October 31, from nephritis, aged 34.

John I. Wilkins, M.D. L.R.C.S. & L.M., Ireland, 1852; Illinois Army Board, 1863; assistant surgeon of the Fourteenth Illinois Volunteer during the Civil War; died at his home in Tiskilwa, Ill., October 19, following a fracture of the hip, aged 83.

John C. D. Davis, M.D. Baltimore Medical College, 1889; surgeon in the Army during the Spanish-American War, and stationed in the Philippines; died at his home in St. Michaels, Md., October 27, from cancer of the stomach, aged 49.

Giuseppe Scarnecchia, M.D. University of Naples, 1890; a member of the American Medical Association; surgeon for ten years in the Italian Army; died at his home in Youngstown, Ohio, October 25, from heart disease, aged 44.

Adam Wenger, M.D. University of Pennsylvania, Philadelphia, 1866; surgeon of the One Hundred and Fifth Pennsylvania Volunteer Infantry during the Civil War; died at his home in Concord, Ill., October 10, aged 68.

Felix O. Neptune (license, Ohio, 1896); a member of the Ohio State Medical Association; for more than quarter of a century a practitioner in that state, died at his home in Caldwell, October 21, from diabetes, aged 58.

Lennox Gresham Walling, M.D. College of Physicians and Surgeons, New York City, 1906; a member of the Providence Medical Society; died at his home in Harrisville, Providence, R. I., October 24, from nephritis, aged 29.

J. Dorsey Sponogle, M.D. Long Island College Hospital, Brooklyn, 1886; formerly coroner of Kitsap County, Wash.; of Port Orchard; died in Providence Hospital, Seattle, October 7, from disease of the stomach, aged 68.

Henry Ustick Onderdonk, M.D. University of Maryland School of Medicine, 1873; a member of the Wyoming State Medical Society; died at his home in Buffalo, Wyo., May 11, from angina pectoris, aged 60.

Joseph L. Romero, M.D. University of Maryland, School of Medicine, 1879; a member of the Florida Medical Association; health officer of Jacksonville for two terms; died at his home in that city, October 14, aged 57.

Timothy Dwight Stowe, M.D. Western College of Homeopathic Medicine, Cleveland, Ohio, 1854; a veteran of the Civil War; died at his home in Mexico, N. Y., October 15, from cardiac dropsy, aged 81.

Jonathan Wilson Shull (years of practice, Ill., 1878); for fifty years a practitioner of Greenup; a veteran of the Civil War; died at his home in Johnstown, Ill., October 4, from cancer of the liver, aged 77.

George Washington More, M.D. University of Michigan, Ann Arbor, 1906; a member of the American Medical Association; died at his home in Ionia, Mich., October 13, from typhoid fever, aged 28.

John Lamar Jarvis, M.D. Vanderbilt University, Nashville, Tenn., 1900; a member of the Medical Association of Georgia; of Atlanta; died at the home of his father in Rome, Ga., October 20, aged 40.

Francis W. Watson, M.D. Rush Medical College, Chicago, 1866; formerly of Eureka, Kan.; died at Kansas City, Kan., March 29, from the effects of strychnin and arsenic, taken by mistake, aged 67.

William Cornelius Bice, M.D. University of Louisville, 1859; for many years a practitioner of Paradise Valley, Nev.; died at his home in Winterhaven, Fla., Nov. 21, 1909, from heart disease, aged 72.

Joseph Nathaniel Birch, M.D. Howard University, Medical Department, Washington, D. C., 1899; died at his home in Kansas City, Mo., October 27, from typhoid fever, aged 35.

William Francis Leonard, M.D. Atlanta (Ga.) Medical College, 1885; a member of the South Carolina Medical Association; died at his home in Reidville, August 9, aged 49.

Edgar R. Knapp, M.D. University of Michigan, 1856; surgeon in the Federal service during the Civil War; died at his home in Saginaw, Mich., October 19, from epilepsy, aged 76.

S. Montis de Haslea, M.D. Shelby Medical College, Nashville, 1859; a resident of the city of Mexico from 1884 to 1893; died at his home in Reno, Nev., October 8, aged 73.

T. D. Fletcher, M.D. University of the South, Medical Department, Sewanee, Tenn., 1906; died at his home in Jenkinsburg, Ga., October 19, from fever, aged 33.

Alfred E. Reinichen, M.D. University of Leipsic, Germany, 1888; died October 26, from the effects of morphin, believed to have been taken with suicidal intent, aged 48.

Edgar Evans Doty, M.D. Medical College of Ohio, 1896; of Lewistown, Mont., was found dead from a gunshot wound of the head, near Windham, Mont., October 16.

John A. Rawls, M.D. Medical College of Ohio, Cincinnati, 1875; formerly of Creston, Iowa; died at his office in Kent, Wash., October 25, from heart disease, aged 62.

Mortimer C. Sandifer, M.D. Louisville (Ky.) Medical College, 1872; died at his home in Geneva, Ky., October 31, from chronic bronchitis and asthma, aged 69.

George C. Worthington, M.D. University of Maryland School of Medicine, 1866; died at his home in Alberton, Md., October 23, from cirrhosis of the liver, aged 66.

David Rogers (license, Michigan, 16 years practice, 1900); for over forty years a practitioner of Millington, Mich.; died October 28, from cancer, aged 77.

Paul S. Cox, M.D. Vanderbilt University, Nashville, Tenn., 1898; of Belton, S. C.; died at the home of his sister in Greenville, October 6, aged 35.

Charles Dix Eichelberger, M.D. University of Maryland School of Medicine, 1868; died at his home in Emmitsburg, Md., October 19, aged about 75.

Shelton Law, M.D. Baltimore University School of Medicine, 1897; died at his home in Springfield, Ill., October 22, from sciatic rheumatism, aged 38.

Daniel Burton Wood, a practitioner of North Carolina for many years; died at Elmwood, September 14, from cerebral hemorrhage, aged 89.

William Camochan Gilday, M.D. Toronto University, 1905; M.R.C.S. and L.R.C.P.; died in Toronto, October 19, from septic endocarditis, aged 28.

Joseph F. Williams, M.D. University of Alabama, Mobile, 1902; of Citronelle, Ala.; died in Mobile, July 30, from typhoid fever, aged 29.

Joseph Norman Guy, M.D. Kentucky School of Medicine, Louisville, 1907; died at his home in Lapine, Ala., October 20, aged 30.

Isaac C. Johnson, M.D. (license, West Virginia, 1881); died at his home in Franklin, W. Va., October 23, from paralysis, aged 63.

John Gilchrist, M.D. Bellevue Hospital Medical College, 1868; of St. John, N. B., died in Central Norton, N. B., June 4.

Correspondence

The St. Louis Vaccination Situation

[The occurrence of tetanus in three school children in St. Louis who had recently been vaccinated, and the death of two of these children, has given rise to considerable discussion in the newspapers in regard to compulsory vaccination. It has given opportunity, also, for the condemnation of vaccination by the antivaccinationists. The health authorities have made a thorough investigation of the three cases and have expressed it as their unanimous opinion that the infection was not the result of the vaccination. In order to get a statement of the situation we wrote for the facts concerning the matter, and are glad to publish the following statement from Dr. G. A. Jordan, Assistant Health Commissioner of St. Louis.]

Health Department, St. Louis, Oct. 29, 1910.

To the Editor:—In accordance with the request for a history of the development of tetanus in vaccinated children in this city, I have the honor to submit the following:

On September 15 R. S. was vaccinated at the Franklin School; September 25 the site of vaccination was injured by a rock, the crust being knocked off, leaving a raw surface. The wound was dressed at the Central Dispensary September 25 and daily thereafter until October 5, at which time he manifested symptoms of tetanus. This department was consulted October 7, the boy was removed to the hospital on that date and died October 9.

On October 4 W. K. was vaccinated at the Carondelet School. On October 16 he developed tetanus and the parents asserted that no injury to the vaccinal site had occurred. Dr. M. C. Woodruff of this department and Dr. M. C. Starkloff, who saw the boy in consultation, are both of the opinion that there had been an injury which had resulted in the removal of the crust. He died October 18.

On September 30 J. M. was vaccinated at the Coté Brillante School and on October 14 the crust came off and the wound was dressed by the mother by the application of a bandage. On October 22 the patient developed symptoms of tetanus. A careful examination of the boy for wounds of any kind showed a wound of the right hand which had the appearance of having been made by two punctures separated about 1 inch and connected by a line which had the appearance of a scratch. The parents were unable to give any history of this wound, what had caused it or when it occurred, and the patient was not able to do so. This boy is at present under treatment and we believe will recover.

A careful investigation of these cases fails to show how these patients came to develop tetanus. At the time the first-mentioned boy (R. S.) was vaccinated, fifty-six other vaccinations were done at his school on the same day with the same virus, eight others in the same room with him. At the time the second boy (W. K.) was vaccinated, eighty-two other children were vaccinated at the same school, with the same virus. The third boy (J. M.) was vaccinated at the same time with eighty-four other children.

All of these children, you will notice, were vaccinated in widely different sections of the city. They were vaccinated by different physicians with the same manufacturer's product. None of the other children who were vaccinated with the material out of the same box showed any untoward symptoms.

The city bacteriologist has examined the remaining lot of the virus used in these cases and fails to find any pathogenic organisms. We are forced, therefore, to conclude that the development of tetanus in these cases was a coincidence due to some local condition probably subsequent to the time of operation.

The fact that tetanus followed a vaccination has been made much of by the antivaccinationists, in spite of the fact that no connecting link between the vaccination and the tetanus can be shown on the most exhaustive examination. Cases of tetanus develop not uncommonly, and following any other injury would simply be regarded as an unfortunate infection. As an instance, we had within the past two weeks a woman dying from tetanus, the infection following childbirth; and as an indication of the anxiety of the antivaccinationists to discredit vaccination in every possible way, we had yesterday a case of tetanus reported in a child who recently had been vaccinated and the physician positively asserted that the tetanus was due to the vaccination. Examination of this case showed that it was positively not tetanus but a mastoid abscess following a suppuration of the middle ear. Two eminent physicians of this city, who are not connected with the health department, are authority for this statement. The patient has been bacteriologically examined, diagnosis confirmed and the patient operated on, which operation also confirmed the diagnosis.

G. A. Jordan, St. Louis,
Assistant Health Commissioner.

Electric Treatment of Poliomyelitis—A Comment

To the Editor:—Everyone must agree with Dr. Diller (The Journal, November 5, p. 1663) that electrical currents which produce pain and nervousness are harmful to children with poliomyelitis. But there is a difference of opinion as to whether or not any benefit is to be derived by passing electrical currents through the muscles which have ceased to respond on account of atrophy. Many observers believe that a galvanic current stimulates muscle growth. As to this, lacking precise data, my personal practice is dependent on such authorities as Duchenne, Bergonie, Zimmern and Erb, who recommend the daily use of the current even when there is no response to stimulation.

Be this as it may, the main advantage of galvanic stimulation of the muscles after poliomyelitis is the excitation of their physiologic contractility, a function otherwise unprovokable in muscles of which the nerve supply is destroyed. It should be obvious enough that the excitation of this function is possible only *before* the structures on which it depends have disappeared. These are the muscle elements. As degeneration of these is well under way in three weeks, it should be equally obvious that the use of galvanic stimulation should not be delayed beyond that period. To postpone it for four months, as some advocate, is to dispense with it at the very time when it is most urgently required. It is to this unscientific delay that must be attributed the difficulties due to the need of such powerful currents as are required in order to produce a visible contraction when only a few fibers remain in the muscle stimulated.

Again, when the therapeutist omits the elementary precaution of gradually accustoming a child to an electrical application, and alarms the child by suddenly making and breaking the current before the little patient is accustomed even to the sight of the battery, there is created another source of discredit of the only means we know of to prevent muscular atrophy of peripheral-neuron type.

In the Washington epidemic this year, electricity has been extensively used immediately after the acute stage of the disease; and I have cognizance of only one instance of trouble of the kind alluded to by Dr. Diller. This was in the case of a girl aged 11, and was due to the injudicious suggestions of the mother, whose whole attitude expressed dread of the power of electricity. She derived this, in part, I believe, from previous advice that electricity was likely to do harm if used within four months of the commencement of the disease. The child herself was willing to bear the discomfort of the application, and the serious perturbation did not occur until some time after I had left the house. Hence the electricity itself cannot be blamed for an outbreak which was clearly suggested to the child.

It is unfortunate that the exaggerated claims of electricians as to some of their powers should prejudice one of the few clearly established medical uses of an electrical current, viz., the keeping alive, by maintaining its contractile function, a

muscle which can no longer be stimulated either reflexly or by the will. Massage and stimulants of reflex activity like strychnin and brucin are equally unable to accomplish this. The faradic current is entirely inefficacious, acting as it does only mediately through nerve.

The galvanic current itself should not be applied where the nerve enters its muscle, but near the insertion of the muscle; for at the motor point it acts only by stimulating that portion of nerve which is not destroyed. The stimulation of this is the very thing we wish to avoid; for galvanism's only use is in supplying an impulse to those muscle-fibers which are no longer connected with a functionating peripheral motor-neuron. On reintegration of the neuron, after subsidence of myelitis—a matter of some months—the need for electrical stimulation ceases as regards that particular muscle fiber; for then contractility is once more obtainable by means of the will. The devices for stimulating this, where small children are concerned, have been well laid down in the report of the New York Committee of 1907.

TOM A. WILLIAMS, Washington, D. C.

Cholera Serum for Hogs but No Antitoxin for Man

To the Editor:—I was greatly interested in what you said in a recent issue of THE JOURNAL (Sept. 3, 1910, p. 863) about hog cholera in Mississippi. Two years ago, I asked the Iowa legislature for money to allow us to distribute diphtheria antitoxin at cost in this state. The chairman of the Public Health Committee of the House of Representatives (who, by the way, is a physician) told me when I presented the subject to him that the state had no money to spend for such a purpose, yet this same physician voted for an appropriation for the manufacture and distribution by the state of hog cholera serum to farmers. The National League for Medical Freedom desires freedom only for the human being and not for the hog. If it insisted on the same degree of freedom for quacks to practice on hogs which they are allowed in their practice on human beings, the hogs in Iowa would not last long. We have practically no registration of births in this state, but every blooded animal is carefully registered. I believe we would get better sanitary laws if human beings were sold for cash.

A. C. MOERKE, Burlington, Ia.
President Iowa State Board of Health.

Historical Note on Acute Infective Paralysis (Poliomyelitis)

To the Editor:—The first description of this disease is generally credited to Jacob Heine, of Stuttgart, who, in 1840, published his first monograph on the subject. While Heine did give the first accurate and complete description, and established it as a recognized disease, it has been generally overlooked that an English physician, Michael Underwood, called attention to it 66 years earlier (1774). For the benefit of those who have not access to Underwood's "Treatise on the Diseases of Children," the following extract is made from the second edition of that work, published in 1789:

"DEBILITY OF THE LOWER EXTREMITIES"

"The disorder intended here is not noticed by any medical writer within the compass of my reading, or is not so described as to ascertain the disease. It is not a common disorder, I believe, and seems to occur seldomer in London than in some other parts. Nor am I enough acquainted with it to be fully satisfied, either in regard to the true cause, or seat of the disease, either from my own observation, or that of others; and I have myself never had opportunity of examining the body of any child who has died of this complaint. I shall therefore only describe its symptoms, and mention the several means attempted for its cure, in order to induce other practitioners to pay attention to it.

"It seems to arise from debility, and usually attacks children previously reduced by fever; seldom those under 1, or more than 5 years old. It is a chronical complaint, and not attended with any affection of the urinary bladder, nor with pain, fever, nor with any manifest disease; so that the first thing observed is a debility of the lower extremities, which gradually become more infirm, and after a few weeks are unable to support the body. There are no signs of worms or other foulness of the bowels; therefore mercurial purges have not been of any use, neither has the bark, nor hot, nor cold bathing. Blisters, or caustics on the os sacrum and the greater trochanter, and volatile and stimulating applications to the legs and thighs have been chiefly depended on. . . . There is no appearance of an enlargement of any of the vertebræ, or joints of the back, nor suppuration in the external parts, and therefore no resemblance to the inflammation of the intervertebral cartilages, the psoas abscess, or the morbus coxaris. . . .

"When only one of the lower extremities has been affected, the above means, in two instances out of five or six, entirely removed the complaint; but when both have been paralytic, nothing has seemed to do any good but irons to the legs, for the support of the limbs, and enabling the patient to walk."

It is interesting to note that Underwood's work on the diseases of children went through ten English editions, five American, two French and one German. The German translation was not made until 1848, that is, 8 years after Heine's publication. Heine refers to other English authors (Abercrombie, Badham), but makes no mention of Underwood.

For the reference which led me to the above extract I am indebted to Baumann, of Breslau, who mentions Underwood in his doctorate thesis.

B. M. RANDOLPH, Washington, D. C.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

IDIOSYNCRASY TO ASPIRIN

To the Editor:—I gave to a man, aged 39, suffering from trigeminal neuralgia, due to exposure, a prescription in capsules, each containing five grains of aspirin with codein and acetphenetidin, to be taken one every three hours. One-half hour after taking one of the above capsules the patient complained of intense itching and tingling of the mucous membrane of the eyelids, lips and nose. One hour later these mucous membranes were so edematous that the eyelids and lips were everted and breathing through the nose practically impossible. The patient was slightly nauseated and regurgitated several mouthfuls of a frothy liquid. The pulse was slightly accelerated—rate 80—but the respiratory rate was not affected. The edema and subjective symptoms subsided very gradually, some edema being noticeable for ninety-six hours. Examination of the urine showed no albumin or casts.

About five months after this ocurrence my patient returned with an attack of neuralgia and I gave him five grains of aspirin in capsule form every three hours. Twelve of these capsules were taken without the least discomfort. A few days ago I again had occasion to prescribe aspirin for my patient, and he returned to my office in a few hours with edema of the mucous membranes of the eyes, nose and lips. The aspirin used on this last occasion was a portion of that used on the second occasion. The patient gave the history of an idiosyncrasy to quinin, two grains of which produced vomiting. Please answer the following questions:

1. Is this a common drug idiosyncrasy?
2. Is edema of the mucous membrane of the head its usual manifestation?
3. Why should one specimen of aspirin cause these symptoms at one time and not at another?
4. What literature exists on drug idiosyncrasy? H. E. W.

ANSWER.—1. The symptoms exhibited in this case appear to be related to angioneurotic edema and to the nervous type of bronchial asthma. Many drugs produce in susceptible patients symptoms of urticaria and occasionally asthmatic paroxysms. The symptoms described were probably due to the salicylic acid component of the aspirin (acetylsalicylic acid).

2. We find no reference to such symptoms produced by salicylic acid in the ordinary works on pharmacology.

3. Such symptoms are occasionally produced by various articles of food also, and it would seem a reasonable hypothesis that they are reflexes from the gastrointestinal tract or that perhaps they may be due to some toxic matter absorbed from the intestinal canal. If this explanation is correct the condition of the stomach and

intestine might determine whether or not the drug would produce sufficient irritation to set up this train of symptoms. Again, the symptoms may be due to the decomposition of aspirin in the stomach, which, experience shows, may occasionally occur. A difference in the character of the stomach contents might therefore determine whether or not the synthetic would be decomposed, yielding free salicylic acid, or would pass through the stomach unchanged.

4. We are unable to find any references to recent articles on the general subject of idiosyncrasy to drugs. Works on pharmacology generally treat of such symptoms under the individual drugs.

BLOOD-STAINS

To the Editor:—Please answer the following questions regarding blood-stains:

1. Is the Hastings' stain a modification of Jenner's or is it one of the Romanowsky group depending on methylene azure for its action?

2. How are the following stains made up: (a) Hastings', (b) Jenner's, (c) Wright's, (d) Giemsa's blood-film stain?

3. What is the technic of staining with each? L. D. M.

ANSWER.—1. Hastings' stain is a modification of Romanowsky's.

2. Too much space would be required to give here the technic of making up these stains, especially as the details have been given in THE JOURNAL and may be found by referring to the following articles:

Technic of Hastings' Blood-Stain, THE JOURNAL, Dec. 26, 1908, p. 2230.

Fisher, E. W.: The Staining of Blood-Films, *Med. Record*, Oct. 2, 1909, abstr. in THE JOURNAL, Oct. 16, 1909, p. 1331 (Jenner's stain).

Hayhurst, E. R.: A Satisfactory Method for Staining Blood-Smears, THE JOURNAL, April 3, 1909, p. 1100.

Cooke, J. E.: A Simple Stain for Blood-Smears (Tiedemann), THE JOURNAL, May 8, 1909, p. 1492.

Stains Described by Giemsa and Levaditi, THE JOURNAL, Sept. 24, 1910, p. 1131.

Wright's Stain is described by Simon, in Clinical Diagnosis, p. 135.

3. The technic is also given in these articles. The technic of Giemsa's stain is the same as described for spirochetes in THE JOURNAL, Sept. 24, 1910, p. 1130, except that a staining of the blood-film for only five minutes is recommended. The composition of these stains and the technic of their use are described in works on clinical diagnosis, such as Emerson, Clinical Diagnosis, second edition; Simon, Clinical Diagnosis, sixth edition; and Cabot, Clinical Examination of the Blood, fifth edition.

SODIUM CACODYLATE AND ATOXYL

To the Editor:—Please give me some information about sodium cacodylate, the dose, mode of administering, etc. I have read Dr. Murphy's article in regard to the arsenical treatment of syphilis in the issue of Sept. 24, 1910, and have run over my file of THE JOURNAL, which dates back about a year, for information in regard to sodium cacodylate, atoxyl, etc., but do not find what I need.
P. L. M.

ANSWER.—Sodium cacodylate is given in doses of ¼ to 2 grains, either in pills, hypodermically or by enema. Sodium arsanilate (atoxyl, or soamin) is usually given hypodermically in doses of ⅓ to 3 grains, gradually increasing, if necessary, until the single dose reaches 10 grains (0.65 gm.) and until a total of 100 grains (6.5 gm.) have been given. The drug should not be given by the mouth, as it is decomposed by the acid contents of the stomach, and toxic symptoms may result. These remedies are asserted to be superior to ordinary preparations of arsenic, because of the slow liberation of arsenous acid in the body. The fact that blindness is occasionally caused by them should not be forgotten. These preparations are described in full in New and Nonofficial Remedies, 1910, pages 35 and 187, and in THE JOURNAL, Nov. 24, 1906, p. 1741, and Sept. 21, 1907, p. 1029. An article by Dr. M. B. Hartzell, on their use in various diseases of the skin, appeared in THE JOURNAL Oct. 31, 1908, p. 1482.

SERUM FOR EXOPHTHALMIC GOITER

To the Editor:—Kindly inform me where I may obtain Beebe's serum and literature bearing on its use in the treatment of goiter. Have you published anything on this subject in THE JOURNAL? I have looked through several index numbers and have failed to find anything under this head.
H. A. VENNEMA, Menominee, Mich.

ANSWER.—There are two reasons why you may not have found references to Beebe's serum in the index: one is that eponymic names are avoided as much as possible; the other that perhaps you did not look back far enough. You will find articles of Dr. S. P. Beebe concerning the serum for exophthalmic goiter in THE JOURNAL Feb. 17 and Sept. 1, 1906, and Oct. 5, 1907. More recently, however, the subject was taken up in this department July 9, 1910, page 143. It was there stated that the serum could be obtained from Dr. Beebe at 414 East Twenty-fifth Street, New York City, and it was pointed out that the serum was furnished only after a case history had been given so that those in charge of its manufacture could be sure that the case was a suitable one for the treatment.

INFORMATION ON CARBON DIOXID PENCILS

To the Editor:—Kindly refer me to the article or articles which have appeared in THE JOURNAL on the use of carbon dioxid pencils in removal of facial blemishes. I do not seem to find them.
L. A. WALKER, Rochester, N. Y.

ANSWER.—THE JOURNAL has published a number of good articles on this subject. One of them was in the Department of Therapeutics, July 23, 1910. This article includes references to a number of other articles previously published.

The Public Service

Medical Department, U. S. Army

Changes for the week ended Nov. 5, 1910.

King, Charles T., and Weed, Mark D., first lieutenants, and Roberts, Ernest E., Medical Reserve Corps, ordered to the Philippine Islands, for duty on transport sailing from San Francisco about January 5.

Woodson, Thomas D., Kramer, Floyd, and Davis, W. Cole, first lieutenants, and Hereford, John R., and Leeper, John F., Medical Reserve Corps, ordered to the Philippine Islands, for duty on transport sailing from San Francisco February 5.

Crum, Wayne H., first lieutenant, and Harris, Herbert I., and Wells, Francis M., Medical Reserve Corps, ordered to the Philippine Islands, for duty on transport sailing from San Francisco about March 5.

Barber, John R., first lieutenant, appointed member of the board for the study of tropical diseases as they exist in the Philippine Islands.

Miller, Albert L., Medical Reserve Corps, ordered to proceed from Fort Meade, S. Dak., to Fort Mackenzie, Wyo., for temporary duty.

Gunckel, George I., dental surgeon, granted thirty days' leave of absence.

Bourke, James, Captain, granted thirty days' leave of absence.

Eastman, William R., captain, ordered to Walter Reed General Hospital, Takoma Park, D. C., for observation and treatment.

Nelson, Kent, captain, granted leave of absence for four months.

Lowe, Thomas S., M.R.C., ordered to Whipple Barracks, Ariz., for temporary duty.

Willcox, Charles, major, granted leave of absence for two months, with permission to go beyond the seas.

Cullen, Charles W., M.R.C., leave of absence extended one month.

Dougherty, James C., Medical Reserve Corps, ordered to Ft. Huachuca, Ariz., for temporary duty.

Campbell, George F., Medical Reserve Corps, ordered to Army and Navy General Hospital, Hot Springs, Ark., for observation and treatment.

Dulin, Charles T., Medical Reserve Corps, November 1, now at Army General Hospital, Fort Bayard, N. M., will report to the commanding officer of that hospital for duty.

Medical Corps, U. S. Navy

Changes for the week ended Nov. 5, 1910.

Dodge, A. H., asst.-surgeon, unexpired portion of sick leave revoked; ordered to the naval hospital, Las Animas, Colo., for treatment.

Fauntleroy, A. M., surgeon, commissioned surgeon from Oct. 8, 1910.

Smith, H. L., passed asst.-surgeon, commissioned passed asst.-surgeon from July 12, 1910.

Sheehan, R. F., and O'Malley, J. J., asst.-surgeons, ordered to instruction at the Naval Medical School, Washington, D. C.

Munson, F. M., passed asst.-surgeon, detached from the *Monterey* and ordered to the *Buffalo*.

Minter, J. M., passed asst.-surgeon, detached from the *Buffalo* and ordered to the *Monterey*.

U. S. Public Health and Marine-Hospital Service

Changes for the seven days ended Nov. 2, 1910:

Glennan, A. H., asst.-surgeon general, granted thirty days' leave of absence from Oct. 1, 1910, on account of sickness.

Pettus, W. J., asst.-surgeon general, leave of absence granted for one month and fifteen days from Aug. 29, 1910, amended to read one month and five days.

White, J. H., surgeon, detailed to represent the service at the next meeting of the Southern Medical Association, to be held in Nashville, Tenn., November 8-10.

Young, G. B., surgeon, order of October 9 to represent service at the annual meeting of military surgeons revoked.

Lavinder, C. H., passed asst.-surgeon, detailed to represent the service at the annual meeting of the Ohio Valley Medical Association to be held at Evansville, Ind., November 9-10.

McLaughlin, A. J., and Rucker, W. C., passed asst.-surgeons, detailed to attend the annual meeting of the Association of Military Surgeons to be held in Richmond, Va., November 1-4.

Creel, N. H., passed asst.-surgeon, relieved from duty on United States Revenue Cutter *Tahoma* and directed to proceed to Chicago and report to the medical officer in command for duty and assignment to quarters.

Turnipseed, D. C., asst.-surgeon, relieved from duty on United States Revenue Cutter *Perry* and directed to proceed to San Francisco and report to Passed Asst.-Surgeon M. W. Glover for duty.

Bell, Charles, acting asst.-surgeon, granted thirty days' leave of absence from Nov. 26, 1910.

Stevenson, J. W., acting asst.-surgeon, granted two months' leave of absence without pay from Nov. 1, 1910.

Board of medical officers convened to meet at the call of the chairman at Port Townsend, Wash., for the purpose of conducting a physical examination of an officer of the Revenue-Cutter Service. Detailed for board: Surgeon J. B. Stoner, chairman; Surgeon J. H. Oakley, recorder.

Board of medical officers convened to meet at the Marine Hospital, Honolulu, Hawaii, Nov. 21, 1910, for the purpose of conducting a physical examination of an officer of the Revenue-Cutter Service. Detail for the board: Passed Asst.-Surgeon Carl Ramus, chairman; Asst.-Surgeon E. R. Marshall, recorder.

Board of medical officers convened to meet at the Marine Hospital, Baltimore, Nov. 21, 1910, for the purpose of conducting a physical examination of an officer of the Revenue-Cutter Service. Detail for the board: Surgeon W. P. McIntosh, chairman; Passed Asst.-Surgeon Dunlop Moore, recorder.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, POSTGRADUATE WORK, CONTRACT PRACTICE, INSURANCE FEES, LEGISLATION, ETC.

THE DISPOSITION OF CASUALTY CLAIMS BY AN ILLINOIS CORPORATION CARRYING ITS OWN RISKS

W. H. Allport, M.D.

Member Illinois Industrial Diseases Commission

CHICAGO

The following outline of the methods and policies pursued for many years by a certain Illinois company[1] in dealing with employees injured in service, or with their families, when killed, furnishes an opportunity to compare some of the systems of compensation for industrial injury now in operation or under discussion in the United States. The corporation in question does not shelter itself behind liability insurance, nor does it maintain a mutual relief department, but itself carries the burdens of surgical expense for industrial casualties and of such contributions as may be made to the injured workman for settlement or relief. The policy consistently pursued by this company, and developed under the guidance of a well-known jurist and statesman, perhaps touches an unexpected high-water mark; but I have close personal knowledge not only that the facts and citations are exactly as stated, but that the results herein set forth can be duplicated by a number of other corporations operating under Illinois laws. The settlements to be referred to were made out of court and without litigation. Although it may be too much to say that the injured employees were unadvised by counsel and in some cases did not even commence suit, it is conceded that the employer in question is served by an unusually intelligent and superior body of workers, thoroughly unionized and vitally aware of their rights and advantages, and that it is advised by a liberal and enlightened legal department deeply animated with the spirit of compromise and not altogether lacking in politic philanthropy. Not for a moment can the compensation sheet of this company be compared with that maintained in states without safety appliance acts and with an unmodified common law, or with the indemnities paid by many other corporations employing foreign, ignorant, and non-unionized labor, who can be taken advantage of at every turn by unscrupulous casualty managers. The findings of the Pittsburg survey of the Sage Foundation[2] represent the outrageous status of industry and its wounded in Pennsylvania; but such a report would hardly hold good for Illinois and the Middle West, where the courts are showing the indirect but insistent pressure of public opinion against the common law, or for corporations coming under Federal and interstate influence.

A large company engaged in a hazardous business, and undertaking to carry itself the burden of casualties to employees, finds it necessary to maintain in its service three agencies for this purpose, viz., surgical, claim, and legal departments.

The duty of the surgical department is to treat injured employees at the expense of the company, such treatment to be irrespective of the question of liability. The surgical department is and should be in no way subordinated to or controlled by the claim department, except as both are cooperating members of the same family. Officers of the company are directed to call company surgeons for the treatment of all injured employees, who are to receive such care, either at their homes or at hospitals designated by the company for that purpose, as the surgical department thinks best, the latter rendering frequent reports to the claim department of the condition of such injured persons. Note that there is here no question of mutuality, either of obligation or of expense, between master and servant; the company without question or complaint assumes that it is both duty and policy to bear the cost and responsibility of surgical service to its injured employees. This is not the case with companies maintaining "relief departments:" such corporations shift the burden of relief on "the fund," and a close analysis shows beyond question that an overwhelming proportion of this fund is made up of the monthly cash contribution collected by the company from the employees.

The surgical department is not expected or required to take any active part in the adjustment of claims. The same amount of attention is given the injured employee when the facts indicate no liability resting upon the employer as when legal liability is clear. The only open interference with the surgical department in the care of such cases by the claim department is when the latter, if it sees fit, may direct that medical attention be discontinued.[3]

To determine liability, investigation is necessary; it is the province and duty of the claim department to make such investigation, and it is a rule of the employing company that no injured employee may return to the service after injuries until he has executed a release.

The claim department does not on its own responsibility undertake to pass on questions of liability, but submits its investigation to a law department and is guided by its opinion in arriving at a conclusion as to which of three classes a given case belongs. Cases are not turned over to the legal department unless actually in suit.

DIVISION OF CASES

The law department divides cases with reference to the company's legal liability to respond in damages to injured employees or to their families, into those showing:

1. Clear non-liability.
2. Doubtful liability.
3. Clear liability.

From the standpoint of injury, cases are naturally divided into three classes:

a. Death cases.
b. Those involving permanent injuries.
c. Those involving but temporary injuries and disability.

1. *Non-Liability Cases.*—When the circumstances indicate that the company is free of legal blame and is not as a matter of law required to reimburse the injured employee or his family, and when the injury is but temporary, it is the policy to allow such an employee, when he has sufficiently recovered to return to his work and when he was not grossly at fault, a sum approximating half time lost. When the injury con-

1. Neither the United States Steel Corporation nor the International Harvester Company.
2. Eastman, Crystal: Work Accidents and the Law, 1910.
3. I prefer to say nothing about occasional dictation by claim and legal departments in the appointments of medical officers.

sists of loss of leg or arm or is of such a nature as to incapacitate the employee from continuing in the same line of service as that in which he was engaged at the time the injury was sustained, a sum varying from $200 to $500 is paid. While there is not much latitude between the amounts mentioned, attention is given the length and quality of service of the injured employee, his financial condition, and the number of persons depending on him, in arriving at the compensation. Approximately the same amount, arrived at in the same way, is allowed the families of those killed in service when nonliability of the company is apparent.

EXAMPLES: 1a. Brakeman stepped back from engine immediately in front of engine on adjoining track; struck and killed. No contention of liability; $500 paid.

1b. Brakeman lining up drawbar with boot, portion of foot amputated. Positive and repeated instructions, both oral and written, in bulletins issued and brought to his attention, forbidding practice of using the foot for this purpose. $300.

1c. Brakeman falling from running board of car account foot slipping; arm fractured. Amount paid equivalent to half time lost.

2. *Cases of Doubtful Liability.*—When injury is not permanent, employee is allowed from half to full time. When injury is permanent and disqualifies the employee from the same line of service, the adjustment is based on as close a determination as possible, in the light of experience and precedent established by the trials of such cases in the various courts, of what would be the probable net recovery if suit were brought and liability established; and under the doctrine of chances, what percentage of such cases would probably be won or lost by the employer if litigated. As amounts allowed in different states and sections of the same state vary, no table or settlements can be established, but each case is handled on its own merits and with a view toward what might be recovered in the locality where suit would be brought. Roughly estimated, for death cases in a state where the maximum recovery allowed by statute is $10,000, from $500 to $5,000 would be paid, according to the earning capacity of the deceased, time in service, life-expectancy, and chances of liability being established. Non-fatal cases in which the injury is more or less permanent are handled in the same way.

EXAMPLES: 2a. Switchman tripping over long piece of iron left near track in yard, run over and killed; $2,500 paid. There would have been dispute as to notice company had of obstruction or time they had to remove it, also as to deceased's knowledge of its existence.

2b. Brakeman riding on foot-board, struck by piece of iron, account of breakage of engine, leg amputated. Amount paid $2,500. Injured person free of blame in any way, controverted question being whether defect causing breakage was discoverable by reasonable inspection, employer's contention being that it was a latent defect.

2c. Switchman, arm fractured coupling cars. Amount paid $500, equivalent to time lost. Question as to application of Federal Safety Appliance Act, man going between cars to open knuckle.

3. *Cases of Clear Liability.*—When the injury involves only temporary disability, full time is allowed.

When injuries are permanent or result fatally, the amount tendered in settlement is such sum as can best be determined would probably be the net recovery to the injured employee or his next of kin, were the case litigated. A position in the service is never made a part consideration of the settlement, but when amicably adjusted, efforts are always made to locate the injured employee, if he so desires, in some branch of the service which he is capable of filling, his tenure of the position depending solely on the proper discharge of his duties.

EXAMPLES: 3a. Fireman struck and killed by overhead bridge; $3,500 paid. Only possible defense that of assumed risk, and it being his first trip over road this could not well avail on account of lack of knowledge the decedent had of the danger.

3b. Switchman, riding on footboard of engine which collided with truck left too close to track. Accident due to excessive speed of engine, supporting claim of negligence on part of engineer; also, dangerous proximity of truck to track, due to negligence of station employees; state statutes (Iowa) denied fellow servant defense; hence, clear case of liability. Permanently stiff knee; $5,500 paid.

3c. Passenger engineer injured in collision with freight train, due to negligence of freight crew. Fellow-servant defense not available on account of interstate traffic. Amount paid $1,000, equivalent to time lost.

The quoted cases illustrate typical phases of a system of voluntary payments as worked out by one company. Of course—and herein will always lie the especial merit of this system of unfixed compensation—the amounts paid in cases in which there is a strong element of liability vary not alone with the visible injury and with the danger of liability, but also with other factors still more important and equitable to both parties. While an injury may be permanent, there are fine degrees of extent of permanent disability; again, the loss of earning capacity of the injured person may depend on adaptability to other kinds of work; the degree of doubt as to permanence of injury is an important controlling element; and the extent to which the employee contributed toward the accident should be and is considered in the adjustment. As all these elements would vary greatly in different cases, it is hard to lay down an absolute rule as to what is to be paid in any concrete case of doubtful or clear liability.

For instance, the amount paid under Example 3b was unusually liberal. In another settlement coming under 3b, and closer to the averages under this company's system, a freight conductor was paid $2,800 for the loss of his right hand while repairing a defective coupler. There were two engines attached to the head of his train which moved back unexpectedly for a cause not definitely determined. This was clear liability, both on account of defective coupler and movement of the engines. The Illinois Safety Appliance Act denied the company the defense of assumed risk, and as the traffic was interstate, the Federal Employer's Liability Act denied it the fellow-servant defense. Ordinarily, loss of the right hand as in this case is a more serious injury than the permanently stiff knee in the case of the switchman. But the effect on the conductor's earning capacity was not so great, as he was an educated man and able to go into other lines of business where he could make as much as or more than in railroading; whereas the switchman was scarcely able to read and write his own name, had been long in the service, and by his injury was totally incapacitated for railroad work, which was the only work he could possibly do to bring him in anything like the wages he received at the time of the accident.

We may advantageously compare the financial results under this schedule with those under any proposed compensation act. A compensation plan would have benefited Classes 1a and 1b, since all the proposed schemes provide for death on the basis of three or four years' pay, and for permanent injuries on about the same scale. The plan would have reduced the benefits for 1c.[4]

In 2a perhaps 20 per cent. more would be paid under a compensation act; somewhat less than was actually paid would be allowed in 2b; whereas in 2c not more than half the amount would be allowed, or in other words, half time for temporary injuries in all cases and not to exceed $10 a week.

In the third classification, larger amounts were paid than would have been allowed under any reasonable compensation plan thus far adopted or seriously considered. Possibly, in 3a, almost as much would have been allowed under a compensation act—probably $3,000; but in 3b and 3c not more than half the amount.

This direct method of dealing with injured employees and with the families of those killed in service, when carried out on a politic and fair-minded basis, results in more liberal payments and better feeling than when liability insurance

4. The "Illinois plan"—of blessed memory—proposed half time, but not to exceed $10 a week. A switchman averages $110 a month in Illinois.

is carried, as it brings the injured employee into closer contact with his employer and his normal representatives. When the insurance adjuster intervenes, no allowance whatever is made in cases of clear non-liability, nor is any surgical attendance given beyond first aid, and no consideration is given by the insurance company in any event to the length of service of the employe, his record, or his disposition toward the employer as regards loyalty and fairness; the sole end sought is an adjustment at the lowest possible figure. Without question, the intervention of liability insurance operates directly as a bar to the establishment and continuance of that friendly relation between master and servant which is one of industry's most valuable assets. It is equally unquestioned that liability insurance tends to diminish that sense of prudence on the part of the employer which leads him to throw every possible safeguard around the person of his workman. Employer's liability insurance has absolutely nothing to recommend it to the industrial world except that it rids the employer of the nuisance of troubling himself over the wounds of labor.

On the other hand, when the injured employee deals direct with the employer, much consideration is given to the former's length of service, disposition, record, financial condition, etc., and the master on his part is deprived of no incentive to give his servant at work the best that money can procure in the way of appliances, surroundings and coemployes. And what is often of more value than the sum actually paid, the injured workman, when his record is good, is assisted in procuring any position which his disabled condition will allow him to fill.

There are both advantages and disadvantages to the employe of the type of company we are considering, in this method, as compared with a compensation plan providing a stipulated allowance in case of injury, irrespective of legal liability of the employer. As we have just seen, under the proposed plan non-liability cases would be more or just as liberally adjusted, and this would also apply to certain cases of very doubtful liability. But cases of probable or clear liability are certainly more liberally handled under the method and by the company which is the subject of this note than they would be under any compensation plan. I may also add that under the compensation plan, the basis of allowance is merely the earnings of the employee and his length of disability, and no consideration is given length of service or exceptionally good record; the injured employee, who may be a foreigner and employed but a week, is to be treated the same as the American citizen who has spent a lifetime in the service of one employer.

It is only in cases which involve fatal or permanently disabling injuries and which also occur under clear non-liability conditions, that the employe and his family suffer materially under this company's system of carrying its own risks, and are worse off than they would be under any scheme of enforced compensation which would be acceptable and reasonable to the employer.

Of course there are many so-called injustices and unfortunate situations arising among cases in which legal liability is the controlling factor in arriving at the compensation. In the first place, the present informal system depends on the temper and disposition of the employer altogether too much; what one employer concedes as not only humane but expedient, another considers crazy extravagance and not for a moment to be considered amidst the stern exigencies of trade. The temptation to overreach the ignorant or helpless victim is often altogether too much for the commercial instinct of the average employer. Secondly, there is obviously much difficulty in settling the question of liability, as not only are the employer and his employee likely to differ on this subject, but so the jurors, lawyers and courts. If the workman resorts to litigation, he is subjected in some localities to great delays and expense, and these features may be and often are taken advantage of by the employer and the insurance company to induce or trick the employee into accepting a smaller sum than would be paid if he were situated so that he could stand up under the burden of litigation. Thirdly, under a system based on negligence and liability a premium is unfortunately placed on dishonesty. A—— is a loyal, fair, honest and honorable man, and not even for his own or his family's welfare will he deviate from the truth concerning the facts connected with his injury, and his statement as to such facts clearly stamps the case as one of non-liability. Hence he receives a very small amount. B—— is untruthful, misrepresents the facts, makes a case of at least doubtful liability; hence, receives a much larger amount than A——. Finally, it must be conceded that the abuse of common-law defenses by employers is a flagrant one and has reached a stage where labor calls loudly for its remedy, and capital—so far as the common law is concerned—is preparing to capitulate on the best possible terms.

But if an employer is denied by statute the fellow-servant and assumed risk defenses, as well as the defense of contributory negligence when the injury is sustained while using defective or improper machinery in violation of federal or state law, and is thus left only with the defenses of comparative negligence and "pure accident,"[5] it would not seem that any employe would have much of which to complain in dealing with any reasonably discreet and honest employing company carrying its own risks. In fact, the valued employee who has been long and closely in touch with his employer would have every reason to expect more liberal treatment under the old system modified as just indicated, than under a fixed and universally applicable compensation scheme.

It is but too true that not all employing companies carrying their own casualty risks deal with their employes in the liberal manner outlined in this paper.[6] When federal law steps in to protect the employe of the interstate carrier the conscience of the employer is soon sharpened, even in non-liability cases. But the cheaper and smaller employers, engaged in a local business within one state, and unsupplied with high-class legal advice, are prone to follow the insurance practice of refusing absolutely to make any allowance whatever in non-liability cases.[7] They pay no gratuities, and never pay at all until constrained by fear lest resort to the courts by the injured employee would result in a judgment for damages. Such a phase of the system is of course constantly provocative of bickering and hard feeling, and is one of the legitimate sources of the discontent of labor with many of the present methods of compensation for industrial injuries.

Negligence is of many kinds and degrees, and while no one would seriously defend the employer who, from any short-sighted standpoint of economy, risks the welfare of employees by requiring them to use wornout and dangerous appliances, or fails to obey the laws with reference to safeguards, such negligence produces less than 15 per cent. of the total number of casualties and may be easily reached by employer's liability and safety appliance acts. By far the greater number of accidents occurring where many employees are brought together are due to the momentary negligence of the worker and his fellows—negligence which no amount of care in the selection of machinery or of employees by the employer can obviate, but for much of which we have come to think the industry is morally, and should be legally, responsible. It is an easy matter to bring these cases also within the scope of an employers' liability act.

Under any proposed *optional* compensation act, the employer, through the option allowed the employee, would continue in most liability cases just as frequently as at present to be mulcted in large damages by law suits. Fully one-half of such damages now go, and would still go, under an optional act, to "ambulance-chasing" lawyers and their representatives; and this where there could be no possible excuse for excepting the case from the compensation scheme on the ground that the employer should be punished for his own negligence. This is manifestly unfair and one-sided. If

5. Under a somewhat similar law, enforced in Austria and Hungary by rigid investigation and severe penalties, the added caution entailed on master and servant has reduced the percentage of casualties formerly assigned to causes other than "pure accident" almost to the vanishing point.

6. Report of the Employers' Liability Commission of the State of Illinois, 1910.

7. See the writer's article in Illinois Medical Journal, June, 1910. Employers' Liability Insurance.

the employee is to be compensated by his employer for losses which heretofore have gone unadjusted because the employer was not at fault, then the latter should have the compensatory right to know at once where he stands after every accident, whether he was at fault or not; and should be allowed to hire by contract, and without other recourse, except for gross negligence, such employees as will take the compensation prescribed by the terms of the law.

If there is any choice to be permitted the employee as to whether he will accept the terms of a compensation act or will take his chances at law, it should be only in cases in which the employer is guilty of gross and wilful—not ordinary—negligence. In no event should the opportunity be left open for an employee, who sues and fails after subjecting the employer to the expense and annoyance of litigation, to demand the benefits of compensation. The neglect to provide such a bar against dual liability in the workman's compensation act of 1906 furnishes the British employer with very just grounds for complaint against the excessive severity of that law.

It is the opinion of an observer who has recently been in a position to know the attitude of several employing companies toward the compensation question, that they fear such an act, not because it is unjust or on account of the additional expense entailed, but because they feel the tendency would presently develop to raise the rate of compensation from time to time, and that at every legislature and congress a lobby would be maintained by labor organizations for that purpose. If the past is any criterion these attacks would be so persistent that after a number of years the increase would constitute a very formidable expense. Furthermore, employers are preparing to oppose any compensation act which leaves it optional with the injured employee either to make settlements under the terms provided by the act or to resort to the courts. As already indicated, the effect of such a faultily constructed law would simply be to require the employer to pay the fixed compensation in clear cases of non-liability, in which the negligence of the employee or his fellows was the sole cause of the misfortune, and to leave the employer to the mercy of tribunals swayed by prejudice in cases in which his liability for the negligence could be proved.

POSTGRADUATE COURSE FOR COUNTY SOCIETIES

DR. JOHN H. BLACKBURN, DIRECTOR
BOWLING GREEN, KENTUCKY

[The Director will be glad to furnish further information and literature to any county society desiring to take up the course.]

Fourth Month—First Weekly Meeting

General Subject for the Month: Surgery of the Spine

ANATOMY OF THE SPINE

SPINAL COLUMN: Location, length, shape, curves, surfaces, regions, movements, landmarks, outline of cord and dural sac. Spinal canal.

VERTEBRÆ: General characteristics; body, pedicles, spinous processes, articular processes, transverse processes, laminæ, intervertebral foramina. Atypical vertebræ in cervical, dorsal and lumbar regions. Intervetebral fibrocartilage, shape, size, structure, attachments. Ligaments, connecting bodies, laminæ, spinous and transverse processes. Muscles of back.

CONGENITAL DEFORMITIES OF THE SPINE: SPINA BIFIDA

VARIETIES: Myelocele, myelomeningocele, syringomyelocele, meningocele, spina bifida occulta.

DIAGNOSIS OF EACH.

TREATMENT OF SPINA BIFIDA: Aspiration, injections. Indications for radical operation. Technic; results of operation.

REFERENCE BOOKS FOR THE FOURTH MONTH

Bryant and Buck: American Practice of Surgery.
Bradford and Lovett: Orthopedic Surgery.
Bull and von Bergman: System of Surgery.
Whitman: Orthopedic Surgery.
Young: Orthopedic Surgery.
Text-Books on Surgery.

State Boards of Registration

COMING EXAMINATIONS

CALIFORNIA: Los Angeles, December 6-9. Sec., Dr. Charles L. Tisdale, 929 Butler Bldg., San Francisco.

DELAWARE: Regular, Dover, December 13-15; Homeopathic, Wilmington, December 13-15. Secretary of the Medical Council, Dr. H. W. Briggs, Wilmington.

KENTUCKY: Louisville, December 15-17. Sec., Dr. J. N. McCormack, Bowling Green.

MARYLAND: 1211 Cathedral St., Baltimore, December 13-16. Sec., Dr. J. McPherson Scott, Hagerstown.

OHIO: Cincinnati, December 6-8. Sec., Dr. George H. Matson, State House, Columbus.

PENNSYLVANIA: Regular and Homeopathic, Philadelphia, December 6-9; Eclectic, Harrisburg, December 6-9. Secretary of the Medical Council, Dr. Nathan C. Schaeffer, Harrisburg.

TEXAS: Palestine, November 22-24. Sec., Dr. R. H. McLeod.

VIRGINIA: Lynchburg, Dec. 20-23. Sec., Dr. R. S. Martin, Stuart.

WEST VIRGINIA: Morgantown, November 14-16. Sec., Dr. H. A. Barbee, Point Pleasant.

Ohio July Examination and October Reciprocity Reports

Dr. George H. Matson, secretary of the State Medical Board of Ohio, reports the written examination held at Cincinnati, July 19-21, 1910. The number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 22, of whom 17 passed and 5 failed. The following colleges were represented:

PASSED

College.	Year Grad.	Per Cent.
Indiana University, School of Medicine	(1910)	75
Ohio-Miami Medical College, (1910) 75, 75.2, 76.5, 76.8, 76.8, 78.1, 78.2, 80.8, 81,.81.9, 82, 83.1, 83.3 84.3, 85.5, 88.7.		

FAILED

Ohio-Miami Medical College, (1910) 65.3, 70.9, 74.4, 74.		
Miami Medical College	(1909)	*62.7

LICENSED THROUGH RECIPROCITY, OCT. 4, 1910.

College.	Year Grad.	Reciprocity with
Northwestern University Medical School	(1910)	Illinois
Hahnemann Med. College and Hospital, Chicago	(1878)	Michigan
College of Physicians and Surgeons, Baltimore	(1910)	W. Virginia
Tufts College Medical School	(1909)	Maine
Univ. of Michigan, Homeopathic College	(1889) (1909)	Michigan
Detroit College of Medicine	(1910)	Michigan
Medical College of Ohio	(1896)	Indiana
Cleveland Homeopathic Medical College	(1906)	Kansas
University of Pennsylvania	(1909)	New Jersey
Royal University of Messina, Italy	(1905)	Vermont

* Second examination.

North Dakota October Report

Dr. H. M. Wheeler, secretary of the North Dakota State Board of Medical Examiners, reports the written examination held at Grand Forks, October 4-6, 1910. The number of subjects examined in was 14; percentage required to pass, 75. The total number of candidates examined was 9, of whom 8 passed and 1 failed. Six candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College.	Year Grad.	Per Cent.
Rush Medical College	(1910)	88
Chicago College of Medicine and Surgery	(1910)	82, 83
Univ. of Michigan, Dept. of Medicine and Surgery	(1910)	81
Minneapolis College of Physicians and Surgeons	(1909)	81
St. Louis College of Physicians and Surgeons	(1898)	75
Milwaukee Medical College	(1910)	85
Laval University, Quebec	(1908)	75

FAILED

Bennett College of Eclectic Medicine and Surgery	(1894)*	

LICENSED THROUGH RECIPROCITY

College.	Year Grad.	Reciprocity with
College of Phys. and Surgeons, Chicago	(1902) (1909)	Illinois
Rush Medical College	(1904)	Illinois
Northwestern University Medical School	(1905)	Illinois
University of Minnesota, Coll. of Med. and Surg.	(1909)	Minnesota
Milwaukee Medical College	(1905)	Wisconsin

* No grade given.

Book Notices

GENERAL SURGERY. Edited by John B. Murphy, A.M., M.D., LL.D., Professor of Surgery in the Northwestern University. Vol. II, The Practical Medicine Series. Cloth. Pp. 615, with illustrations. Chicago: The Year-Book Publishers, 1910.

A review of this volume shows that the surgery of the nerves, of the heart and arteries, the thyroid and some of the other ductless glands, the brain, the stomach and intestines, together with the treatment of peritonitis and hernia, are the subjects which loom large in the year's work in surgery. The editor calls attention to the fact that accuracy in surgical diagnosis is advancing each year, and that the production of prophylactic immunity, as in tetanus, rabies, and, he hopes, in tuberculous surgical affections, is attaining the status of a fixed practice in every surgical hospital. He also insists that the chronic infections, as of the antrum, the various sinuses, the tonsils, urethra, gall-bladder, etc., as etiologic factors in nephritis, endocarditis and myocarditis and in other secondary disease with which the surgeon has to deal, have not been sufficiently appreciated. The voluminous literature of surgery each year makes this number of the Year-Book series considerably larger than those on other topics. The book is well illustrated, as usual, and barring the use of figures in the text, where any recognized usage either of language or printer's style would require words, together with some other minor shortcomings in the editing, it is a very satisfactory number of the series.

A MANUAL OF TOXICOLOGY. A Concise Presentation of the Principal Facts Relating to Poisons, with Detailed Directions for the Treatment of Poisoning. Also a Table of Doses of the Principal and Many New Remedies. By Albert H. Brundage, M.D., Professor of Toxicology and Physiology in the Department of Medicines, Dentistry and Pharmacy of Marquette University. Seventh Edition. Price, $1.50. Pp. 428, with illustrations. Brooklyn: The Henry Harrison Co., 1910.

This comprehensive work on toxicology contains descriptions, definitions, classifications of and identity tests for many substances, together with instructions for the treatment of different kinds of poisonings. Methods of detecting poisons under various conditions are detailed, considerable space being devoted to the technic of post-mortem work. The book is supplemented by colored plates illustrating the effects of various poisons on the stomach. There are also several pages of cuts illustrating the more common poisonous plants. A table of doses and a series of questions for the review of the work are given. The material is well arranged, making it available for quick review. It is a handy reference book as well as a practical guide for the actual examination for poisons.

PRACTICAL OBSTETRICS. By E. Hastings Tweedy, F.R.C.P.I., Master of the Rotunda Hospital, and G. T. Wrench, M.D., Late Assistant Master. Second Edition. Cloth. Price, $5.50. Pp. 491, with 159 illustrations. New York: Oxford University Press, 1910.

This book has been revised and new subjects added. Among the additions are pubiotomy, hysterotomy and infant digestion. There are still many things in its teachings, however, that do not conform to accepted practice in this country. The method of giving saline infusions directly into the breast and the giving of ergot when there is delay in the coming away of the membranes and allowing them to come away with the lochia, were referred to in our review of the first edition. In the latter instance only has the original counsel been modified to the extent that the authors say that if much of the membrane remains it is likely to cause trouble and that it would perhaps be better practice to remove it at once. The authors' views on uterine inertia, contracted pelves and rupture of the uterus have been modified somewhat.

PRACTICAL NURSING FOR MALE NURSES IN THE R. A. M. C. AND OTHER FORCES. By Major E. M. Hassard, R.A.M.C., and A. R. Hassard. Cloth. Price, $1.50. Pp. 334, with illustrations. New York: Oxford University Press, 1910.

This is a valuable treatise on nursing from a practical standpoint, giving the technic of the manifold duties in the care of the sick, injured, and of those operated on which fall to the lot of the nurse. It not only describes clearly what should be done, but as clearly indicates what should be avoided.

Medicolegal

Michigan Law With Regard to Physicians Prescribing Liquor

The Supreme Court of Michigan says, in the case of People vs. Rice (126 N. W. 981) that the general purpose of the law of that state (section 26 of Act 107, Laws of 1909) is to prevent the manufacture of liquors and all traffic in liquors, as beverages, in certain counties. Druggists may traffic in liquors for medicinal or scientific purposes. The purposes for which liquors are desired must be certified to the druggist either by a regular practicing physician or by a superintendent of a hospital, medical, or educational institution. If the certificate is a prescription, it must be written, must name the person for whom the liquor is prescribed, the kind and quantity prescribed, must be dated, and signed with the full name of the physician.

The lawfulness of the sale does not necessarily depend on the good faith of the physician. It does depend on the good faith of the druggist. The good faith of the physician may not always be a protection to the druggist because the druggist may know of facts and circumstances indicating clearly, to him, that the liquor called for will be used as a beverage. In short, there is no necessary connection as affecting the good faith of either, between the conduct of the physician prescribing, and the conduct of the druggist in selling, liquor.

The court does not find in the statute an intention to punish physicians for issuing prescriptions for liquor in bad faith. It means by this that apt terms are not found to create a substantive offense, the elements of which are writing and delivering carelessly or dishonestly, prescriptions for liquor. If physicians are amenable to the pains and penalties of the act, it is because they have indirectly, but intentionally, brought about a sale of liquor to be used as a beverage. They do not, in issuing prescriptions in bad faith, occupy the position of merely practicing subterfuge or telling untruths in order to secure liquor. The law intends that sales may be made on prescriptions. It intends that no sale shall be made otherwise than on prescriptions. It has made the prescription, and therefore the physician, potential in securing liquor. In this way a physician becomes a party to every sale made on his certificate. Nevertheless the court is constrained to say that, unless there is open or tacit collusion between the druggist and the physician, so that the actual sale is unlawful because, though made on a certificate proper in form, it is made in bad faith, the law is not so written as to make the conduct of the physician unlawful. It is not so written that an intention can be found to make a particular sale lawful as to the druggist and unlawful as to the physician.

Board of Health Records Not Evidence Between Private Parties

The Appellate Court of Indiana, Division No. 2, holds in Brotherhood of Painters, Decorators and Paperhangers of America vs. Barton (92 N. E. R. 64), that the record of the board of health of a city is not made admissible evidence of the cause of death in a suit for insurance by the Indiana act of 1907, entitled, "An act to collect accurate records of deaths, births, contagious diseases and marriages, prescribing the duties of the state board of health and of all health officers in relation thereto," etc. The court says that the title of the act discloses its purpose. It was enacted in the exercise of the police power of the state to prevent the spread of contagious diseases and generally to promote the public health. It does not purport to interfere with private rights of citizens, nor to create a new rule of evidence. Within its legitimate objects and purposes the record in question was proper evidence. But whether evidence of the character in question is required to be kept by virtue of a municipal ordinance authorized by statute, or by statutes, can make no difference in principle. In the absence of positive declaration on the part of the legislature, it will not be presumed that the right of private citizens are to be foreclosed by the opinion of a public health

officer contrary to the general rule of evidence, however learned or conscientious that officer may be. The public is interested in vital tabulated statistics, which as a rule may be approximately correct. The rights of the public by this wholesome law are subserved when they have the benefit of the facts collected under its provisions, but no public interest is promoted in the use of such data to prevent or retard (contrary to established rules of evidence) the assertion of private rights between individuals and in which the public have no concern.

Competency of Physicians to Give Opinions as to Blood-Stains, Hairs, etc.

The Supreme Court of Arkansas says, in Miller vs. State (128 S. W. R. 353), a homicide case, that it was urged that error was committed in permitting certain witnesses to testify that the parts of a body found were parts of a human body; that certain stains on the floor were blood-stains, and that hairs found were human hairs. This contention was made on the ground that this testimony was but the opinions of the witnesses, and for that reason was inadmissible. But the court is of the opinion that no error was committed in allowing the introduction of the testimony complained of. This testimony was given by two physicians, who had been educated at medical schools and who had had extensive experience in their practice of medicine and surgery, as well as by other witnesses. The physicians actually saw these objects themselves, and they, as well as the other witnesses, first named and described these objects to the jury as well as they could. The two physicians were presumed to understand the questions pertaining to their profession, and to be expert on those questions, and were competent to give their opinions relative thereto. The objects observed by them, and about which they testified, were within the line of their professional experience, and as to these they enjoyed a means of special knowledge. When a witness has, by experience and education, gained special knowledge and skill relative to matters involving medical science he is entitled to give his opinions thereon. Furthermore, the opinions of ordinary witnesses, derived from observation, may be given in evidence in cases where, from the nature of the subject, the facts cannot be otherwise properly presented to the jury. Thus it has been held that a witness may testify that spots and spatters on a thong were blood; that blood seen by the witness was fresh blood; and that certain hairs were human.

Society Proceedings

COMING MEETINGS

Hawaiian Territorial Med. Assn., Honolulu, Nov. 26-28.
Southern Surg. and Gyn. Assn., Nashville, Dec. 13-15.
Western Surg. and Gyn. Assn., Chicago, Dec. 19-20.

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Special Meeting Held Oct. 14, 1910

The President, DR. GEORGE E. DE SCHWEINITZ, in the Chair

SYMPOSIUM ON ACUTE AND EPIDEMIC POLIOMYELITIS

DR. P. A. LEWIS of the Rockefeller Institute read a paper on the etiology.

The Lesions of Acute Poliomyelitis

DR. A. J. SMITH: Much of the study of this subject has been fragmentary because of the difficulty in obtaining specimens from the living child and opportunity for necropsies. The disease has been looked on as a nervous affection, but last year the feeling of the profession changed and the view has been taken that it is a general infection with local involvements of the central nervous system, leaving behind serious alterations of the central nervous system with sequels extending out into the muscles. More careful examinations should be made, and we need to have more data in connection with the rest of the body.

Anterior Poliomyelitis

DR. JOSEPH S. NEFF, director of the Department of Public Health and Charities, Philadelphia: The results of a careful study of the reported cases of anterior poliomyelitis in Philadelphia during the last summer demonstrate very little, with possibly two exceptions, and become of value only by adding to statistics for further deductions. The two exceptions are the parts played in the etiology by feeding, and general housing conditions. Of 99 cases in Philadelphia, 6 children were breast-fed alone; 11 were bottle-fed; 43 were mixed-fed, and 38 partook of ordinary table food. The disease was practically absent in the wards of the city with the highest congestion of population, and the only location showing apparent grouping of cases has the lowest ratio (except suburban wards) of population to the acre. The study tends to show that general sanitation, crowding and housing conditions do not play a part, at least in Philadelphia, in the etiology of the disease. From observation of all the cases reported it is evident that poliomyelitis is mildly contagious and much less so than other so-called children's diseases. Especial attention is called to the fact that the weeks ending July 23 and August 6, in which the greatest number of cases occurred, followed the hottest weeks of the summer. The main point to be taken into consideration by health officials, until more definite knowledge of the cause and spread of the disease is obtained, is the means of prevention. Their duty is to prevent the spread of disease, but at the same time the welfare and comfort of the community must be considered. The questions involved are as to isolation, quarantine, exclusion from school of other children in the family, placarding, etc. Up to the present time, and in view of the approaching cold weather, the health authorities of Philadelphia have done nothing further than to order isolation of the patient and disinfection of all discharges. My own thought is to await developments next spring. Should we have isolated cases only, no further action will be needed. Should the disease become epidemic my present idea is to compel isolation of the patient, exclude from school other children in the family for a period slightly beyond the period of incubation of the disease, and give written instructions as to the disinfection of all discharges; but I do not believe that it will be necessary to placard the house. There seems to be as many secondary cases in which isolation has been maintained as in which it was not attempted.

Symptomatology and Treatment of Poliomyelitis

DR. CHARLES K. MILLS: This paper is based chiefly on studies made during the recent epidemic. In my opinion the probable cause of acute poliomyelitis is some form of protozoon, which is perhaps carried by an insect to be found in the neighborhood of the prevailing epidemic. In the fulminant cases, meningitis is commonly present and may be severe; in other cases it is transient, and often absent. In several cases which have come under my observation death has occurred with evidences of involvement of the bulb. Paralysis involving one or two of the ocular muscles has been present in some instances. In one case a moderate degree of facial paralysis was the only residual palsy. A second recrudescence of the acute symptoms was seen in several cases. My investigations show the period of incubation to be usually from one to two weeks. Prognosis as to residual paralysis in the cases I have seen has been relatively bad. In treatment I would advise the use of hexamethylenamin in the acute stage; febrifuges, fluid extract of ergot, the large Bier's cups, calomel with salines and rest, when possible on the side or in the prone position. Massage or electricity should not be used for several weeks after onset and such treatment should be conservative in character. As a rule operative procedures should not be carried out for several months. Occasionally some kind of support to prevent possible deformity is advisable.

Discussion on Poliomyelitis

DR. B. FRANKLIN ROYER, Harrisburg: The studies made by the Department of Health suggest that the disease is a systemic one, showing only occasionally paralysis as a symptom. Some of the patients show fever and the disease goes no further. From the standpoint of some observers many die in cases in which the disease is given as bronchopneumonia and in which the fever has been high.

DR. F. X. DERCUM: Holt and others have come to the conclusion that the contagion is spread by human carriers not in themselves infected. The mucous membranes and the digestive tract should receive special attention, and certainly the close contact of children who are ill should be avoided.

DR. J. P. CROZER GRIFFITH: Danger comes from the abortive cases because of the inability to recognize them. There should be some test devised for abortive cases.

DR. HOBART A. HARE: I believe that if the physician will simply attend to the ordinary hygienic measures the recoveries will be far greater in number than with the active medication of the patient. After the sharpness of the attack attention may be paid to strengthening the partially destroyed cells.

DR. JOHN K. MITCHELL: I believe that damage is done by too early and too severe treatment. Physicians should not yield to demands of parents that something be done, but should insist that six weeks or two months be allowed before special measures are used. He should particularly avoid the ordinary mistake of allowing the child to sit up too soon. I have seen lateral curvature as the result of this mistake. Electricity should not be used under six or eight weeks, and there should not be discouragement from getting no result in the early treatment. The only satisfactory rule about the use of electricity is that the current that will produce the result is the one we want to use.

DR. JOHN B. ROBERTS: I understand that this disease is believed to be transmitted usually by infection through the nasal and facial mucous membrane. If this theory is correct, is it not a physiologic error to encourage or adopt the prevalent practice of total extirpation of the faucial and pharyngeal tonsils in children in whom there is inflammation and hypertrophy of these organs? The glossal, faucial and pharyngeal tonsils are adenoid structures apparently placed as sieves or guardians of the alimentary and respiratory tracts to arrest the entrance of micro-organisms into the general circulation. The occurrence of poliomyelitis more frequently in children of the well-to-do than in those in the lower walks of life may, perhaps, be due to the fact that such well-born children are nowadays deprived by operation of these organs more commonly than the children of the poor.

DR. WILLIAM G. SPILLER: I have seen one case in which lumbar puncture with the removal of an ounce and a half of fluid relieved the intense pain and the difficult breathing.

DR. HENRY W. CATTELL: The treatment which is carried out abroad to a very large extent is the application of a plaster-of-Paris cast to maintain a proper position of the child in bed.

DR. ALFRED GORDON: The manner of transmission of the disease and the resistance of the virus to cold are important factors in prophylaxis.

DR. DAVID RIESMAN: One cannot escape the view that infantile paralysis is one of the transmissible diseases. Even though the contagion may be slight, in view of the terrible nature of the disease, all possible precautions against its transmission should be taken. It has occurred to me that some of the cases of polioencephalitis occurring sporadically in children and in adults, may have the same etiology as anterior poliomyelitis. A short time ago I saw with Dr. Hand a man, also seen by Dr. Mills and Dr. Spiller, who seemed to be suffering from a hyperacute attack of polioencephalitis, the first symptom having been facial paralysis. I have also in mind another case of polioencephalitis, in a little boy of 8, who, after a desperate illness, made an almost complete recovery. Nothing remained except diplopia, due to a weakness of the external rectus. From an epidemiologic standpoint, it may be very important to trace the relation of these cases to epidemic anterior poliomyelitis.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

Sixtieth Annual Meeting, held at Pittsburg, Oct. 3-6, 1910

(Continued from page 1673)

Fracture of the Shaft of the Femur; End-Results

DR. W. L. ESTES, South Bethlehem: One must make a sharp distinction between good functional results, and satisfactory, cosmetic and functional end-results, in estimating his success in the treatment of a fracture. One must divide his results into two classes: (1) patients who immediately after union are able to use the affected member properly, and (2) patients who acquire good use of the member after comparatively long periods. I think less than a dozen cases have ever left my hands with an ideal result, namely, no appreciable callus, no shortening, no deformity, and perfect function. The open method of treatment of fractures is far best for most cases of adults who are treated in a clean and well-conducted hospital.

DISCUSSION

DR. G. W. GUTHRIE, Wilkes-Barre: There is no doubt in my mind that the future will justify the open method of treatment of fractures of the femur as well as other fractures of the bony structure. I have never regretted treating an open compound fracture in which perfect adjustment and perfect fixation of the fragment was possible.

DR. D. H. STRICKLAND, Erie: A majority of fractures occur in laboring men who can ill afford to be confined to bed; they have a family dependent on them and consequently the more quickly they are restored to usefulness and to support of their families the better our reputation will be. I do not believe that we ought to pay much attention in this class of cases to cosmetic surgery. If we get a good limb that enables a man to perform his work as he did previous to his fracture, it is much better that we return him to duty as early as possible than that we should return him with a beautiful limb.

DR. C. E. THOMSON, Scranton: I want to make a plea for better and repeated attempts to reduce fractures without cutting. Two years ago, I had two physicians with fractured thighs under my care. I reduced one of these cases twice, each time the fracture having slipped. The second one also slipped three times.

DR. J. T. RUGH, Philadelphia: As regards the measurements of the lower extremities, its accuracy will depend entirely on the relationship of the pelvis to the spine. When the pelvis is put at right angles to the spine, and the two anterior superior spines are put in direct right angles to the center of the body and the legs placed in the same degree of abduction, one is in a position to measure the exact length of the legs. The slight abduction or adduction of the leg as the patient lies on the table will alter very materially the results of measurements.

DR. G. G. DAVIS, Philadelphia: The open operation for fracture is a difficult one and a big one, and, if undertaken extensively by surgeons generally, I believe it will have a very extensive mortality.

DR. J. B. ROBERTS, Philadelphia: There are three kinds of fractures: those which cannot be treated well if they are opened, a middle class, and a class which can be treated best by opening. The whole question depends on the fact that the man who undertakes to reconstruct that portion of the bone must know his anatomy. He must know something of the displacing causes, and he must be a mechanic as well as a surgeon in order to treat a fracture. I would say: Don't open a fracture unless you know something of aseptic surgery; don't treat a fracture unless you know the anatomy of the part and its relationship with surrounding parts, and be careful not to believe all that the skiagraph appears to show. There is nothing that lies so much as a skiagraph taken by a man who knows nothing of anatomy.

An Operation for Ankylosis of the Hip-Joint in Which Baer's Membrane Was Used

DR. G. G. DAVIS, Philadelphia: The patient was a girl of 10, with bony ankylosis of hip in a somewhat flexed position, due to a previous rheumatic attack. Incision was made below

the anterior superior spine of the ilium. The head of the femur was solidly united by bone to the pelvis. Bone was cut away in the line of union. The end of the femur was enveloped by a sheet of Baer's membrane (chromicized pig's bladder), held in place by chromicized catgut; the wound was closed and drain left for 24 hours. The position of the limb is good, about 5 months after the operation. There is no pain on walking, though there is slight shortening and about 45 degrees of flexion.

DISCUSSION

DR. J. T. RUGH, Philadelphia: The method proposed by Dr. Baer is a very decided advance over any method previously employed in selected cases. In those cases in which there still remains some of the articular structures, there is no doubt of the value of chromicized pig's bladder. In cases with absolutely bony fixation, the method of fixation has not proved the success hoped for it.

Spina Bifida and Its Surgical Treatment; With a Description of an Osteoplastic Operation

DR. W. W. BABCOCK, Philadelphia: The features of the operation which I perform are: a vertical suspension of the patient with the head dependent to limit shock and the leakage of cerebro-spinal fluid; local anesthesia; the return of the distended inner layers of the sac to the canal without extensive isolation or injury to adherent nerve trunks. If no semblance of a canal is present, a sufficient groove is cut into the spine or sacrum; the edges of the dura are isolated and accurately sutured over the cord, and a ribbon of bone on either side of the defect is mobilized and left attached above and below. For this purpose the rudimentary laminæ or bases of the spinous processes are divided by Satterlee's bone forceps. The two osseous double pedicled flaps are united in the midline. The two broad double-pedicled flaps consisting of the outer layers of the erector spinæ muscle and their over-lying aponeurosis, which are slid inward over the bone flaps and united in the median line by buried chromic catgut, are isolated. The everted edges are united with skin by means of mattress and interrupted sutures without drainage.

DISCUSSION

DR. S. L. MCCURDY, Pittsburg: One of the most difficult things, especially in the surgery of children born with defects, is spina bifida. There is no other condition that has called forth the ingenuity of the surgeon as this has. As many different methods have been used to close the defect as operators almost. The one presented by Dr. Babcock is admirable.

(To be continued)

INDIANA STATE MEDICAL ASSOCIATION

Annual Meeting, held at Fort Wayne, Sept. 28-30, 1910

(Continued from page 1671)

Migraine

DR. C. F. NEU, Indianapolis: Migraine is a functional neurosis characterized by sudden attacks of pain on one side of the head, often preceded by evidences of irritation of the brain, followed by digestive disturbances. The active cause is believed to be sudden development of a poison of undetermined nature which first stimulates and excites the brain and then causes pain and a suspension of brain functions, and which is eliminated by the gastro-intestinal tract or the kidneys, the principal symptoms being headache, nausea, vomiting, disturbance of vision, disturbance of speech, disturbance of sensation in the limbs, vasomotor disturbances, motor disturbances in the limbs and mental disturbances. It is difficult to say whether migraine is vasomotor spasm or vasodilatation. The treatment may be summed up under the following heads: (1) correction of errors in the mode of life; (2) correction of errors and care in diet, ventilation and sanitation; (3) correction of defects in general health; (4) correction of constitutional diatheses.

DISCUSSION

DR. G. W. MCCASKEY, Fort Wayne: I agree with Dr. Neu that if this disease can last a lifetime, some as yet unknown anatomic condition must be responsible. It must be admitted that there are many points of resemblance between migraine and epilepsy, but I think that the most careful investigation along this line has tended to show that there is no essential relationship between them. In a few cases on record there has apparently been a transition from migraine to epilepsy, or *vice versa*. On the other hand, I believe that it can be shown that migraine is no more common among epileptics as a class than among those who are not. In regard to the real pathology of migraine, we do not know enough yet to form a theory, but certain facts seem to me to account for a great many of the manifestations, and these are particularly the vasomotor changes. A theory enunciated by Spitzgen assumes that the essential, underlying anatomic condition is sudden instability in the vascular condition of the chorioid plexus. We must look to the nervous system itself for explanation of the peculiar changes of the character of the chorioid plexus which result in migraine. The ophthalmic changes are very important, and this seems to me to support the theory of vasomotor changes being one of the manifestations of migraine.

Whether these theories are correct or not, we are face to face with a very common malady concerning which we know very little; but we are not quite helpless. We cannot cure many of these patients, but we can do for them what we can do with epilepsy—we can make the attacks lighter and farther apart. Treatment should lie along the lines indicated by Dr. Neu, and it seems to me it should lie in one of three or four directions, with exceptions in regard to what might be called the auxiliary etiology. In the first place, there is a group of cases in which the patients are incurable; in these cases the attacks are due to reflex disturbances of some sort. Second, are those cases the result of toxic disturbances. Whether the average case is the result of toxin, is a different question. An auto-intoxication resulting from intestinal trouble may lead up to this disturbance of the nervous system and precipitate an attack. Then there is the overstrain of the nervous system.

DR. C. S. BOND, Richmond: It has been maintained for a long time that these cases of migraine are largely due—barring infections, tumors, etc.—to auto-infection. I believe that not enough attention is given to this part of the subject. As a rule, these patients do not consult a physician for a mere slight headache, but wait till the disturbance has gone on for 5 or 6 or maybe 20 years. In that case some more or less submerged factor has operated on the patient all that time, but which comes more to the front, often on Monday. On Sunday the patient has eaten more and as a rule works less than on any other day. Auto-infection may be due to constipation; the patient may eat too much food or too much of one kind. I had a woman patient who had had migraine for twenty years. I merely put her on a restricted diet. She has not had an attack of migraine for ten years.

DR. ALBERT STERNE, Indianapolis: Every case of migraine is a law unto itself. This condition—I am not treating it as a disease *per se*—is one of metabolism largely. It is, in addition to that, a catabolic phenomena, now this, now that, in a person who has a fundamental nervous instability. The paroxysmal attacks of migraine are to a degree like epilepsy; there is the same fundamental instability. We have a momentary factor and a fundamental factor. The former can be reached in various ways; but the fundamental trouble in migraines of congenital type, is practically out of reach. At the same time, we must admit that there is an anatomic condition in these cases. We must treat these patients so as not to mask the symptoms; not during the attacks, but between them; and every patient must be studied individually. I believe that the physician, the patient and the patient's family fail to realize that we are dealing with the most difficult problem that confronts us in medicine.

DR. C. F. NEU, Indianapolis: It is necessary to regulate the habits and diet of these patients. I believe with Dr. Bond that these cases are dependent on auto-intoxication of intestinal origin. We must begin treatment during the two or

three days of well-being at the onset of the attack, and not after the attack has begun. The benefit of the treatment depends on its beginning before the onset of the attack. Those who have investigated the transitional cases of migraine into epilepsy say that we must bear in mind that in epilepsy the minor attacks may be present for a long time before the immediate seizure occurs, and that in most cases of transition of migraine into epilepsy there has been present evidences of these minor attacks.

The Laboratory vs. Clinical Methods

DR. DWIGHT M. GREEN, Muncie: I am not a laboratory crank. The title of this paper, chosen with malice aforethought, is a deliberate misnomer.

Progressive medicine has proved conclusively in recent years that the imaginary strife between laboratory and clinical methods of diagnosis is as needless and unreasonable as the war which raged a few decades ago between science and religion. The man who would practice medicine by the aid of the microscope and the test-tube alone would be a colossal fool: he would fail in his profession, and deservedly. Yet serious as such an arraignment may be, can less be said of him who depends for his diagnosis solely on the subjective clinical evidence which his senses present him at the bedside, or on the problematical value of the patient's word, and on his own experience recalled from out of the past? None of us, no matter how clear-sighted we may be as clinicians, can afford to neglect or ignore any assistance to diagnosis which may be secured within the bounds of reason; but least of all that assistance which a few minutes spent in the examination of urine or sputum or blood will give—the assistance of the laboratory.

DISCUSSION

DR. R. H. RITTER, Indianapolis: We are seeing the spread of specialists and specialism. Every town of any size has now its specialists for ear, nose and throat, and eye. If there is one thing which to my mind indicates the need of a specialist, it is the necessity for this so-called mechanical means of diagnosis. And it should be said to the credit of Fort Wayne that it supports a man—gives him a living salary—to do these things; and it is to the discredit of any other town of any size in this state that no such opportunity is afforded.

DR. G. W. MCCASKEY, Fort Wayne: The time is past when it is necessary to go before any medical society and laud the value of laboratory methods. It may be difficult for me, after some fifteen or twenty years' absence from the ranks of the general practitioner, to put myself in his place, but with all the classes of cases I see, I do not think any patient passes my hands in examination without a more or less complete urine and blood examination. I feel that I want the data that can be obtained from these two sources in every case that comes before me for attention. By laboratory diagnosis we can see the breakers that are ahead of them—months and years ahead, and frequently, by complete laboratory methods which carry us beyond the immediate necessities of the case, we may be able to see years ahead. I have two or three patients under observation in whom I found, probably two years ago, a relative lymphatic cytosis with leukemia. I found some glandular enlargement, the spleen barely palpable. These patients are likely in the future to suffer from lymphatic leukemia. There is no conflict between laboratory and clinical methods. I would no more attempt to make a diagnosis without the aid of laboratory methods than I would without the history of the case. This examination may lie along the line of complete fecal examination or stomach examination, but it should always be a fairly complete urine and blood examination. In my satchel in which I carry my ordinary appliances I invariably carry bouillon and an outfit for making cultures, which I often find of very great benefit in making diagnosis.

DR. D. W. GREEN, Muncie: Men of ability who are placed in a position to have all their laboratory work done for them are fortunate indeed; they are able to give their patients the best that any man can give. Those of us who are not so placed can only attempt to do both lines of work ourselves.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York

October 29

1 Pernicious Anemia; Its Definition and Treatment. E. Grawitz, Berlin.
2 Suppuration of the Antrum of Highmore. W. A. Wells, Washington, D. C.
3 Twentieth Anniversary of the Electrotherapeutic Association. A. D. Rockwell, New York.
4 A Case of Typhoid Meningitis. B. Schwartz, New York.
5 The Saw and Crushing Instruments in Surgery of the Nasal Septum. B. DeF. Sheedy, New York.
6 *The Bedside Widal Test. G. Gillman, San Francisco.
7 *Exophthalmic Goiter Simulating Typhoid Fever. L. Dlugasch, New York.

6. **Bedside Widal Test.**—The test, described by Gillman, requires no laboratory facilities or special technical skill and consumes so little time that it enables the practitioner to make the test at the patient's bedside and to know the result within a few hours. Into a very small test tube (5mm. by 3 cm.) or homeopathic vial, place 48 drops of formalized culture of typhoid bacillus and to this add 2 drops of the patient's blood obtained in the usual manner from the lobe of the ear or tip of the finger. The tube is next corked, shaken and set aside. After having set for from 3 to 5 hours, the tube is examined and the reaction noted, care being taken not to disturb the fluid. The formalized culture before use is always turbid, due to the suspension of bacilli. Now, if the added blood should give a positive reaction, the bacilli are agglutinated (clumped) and with the blood-cells fall to the bottom of the tube, leaving the supernatant fluid clear. A clear supernatant fluid therefore indicates a positive reaction; a turbid supernatant fluid, a negative reaction.

When noting the reaction, it is of material advantage to compare the supernatant fluid with some of the formalized culture contained in a similar tube as a control. In a positive reaction the fluid will be decidedly clear as compared with the control, which is always turbid, while in a negative reaction the fluid will be as turbid as the control. During the early part of a positive reaction with a serum of low titre (agglutinating strength) the blood-cells will first settle and then a flocculent precipitate (clumps) of bacilli will appear which later settle to the bottom, leaving the supernatant fluid clear. For agglutination tests, other than typhoid, the same technic can be employed, replacing the typhoid culture by a formalized culture of the required micro-organism. Gillman suggests that it would be of great advantage to all concerned if some laboratory should furnish the practitioner with suitable vials containing the proper quantity of the formalized culture, ready for use, or the culture contained in a larger bottle accompanied by one or more suitable empty vials in which the test could be made any number of times, the vials being cleaned by simply washing before each new test.

7. **Exophthalmic Goiter.**—The insidious onset, in Dlugasch's case, with general malaise, headache, nausea, a tongue that looked like typhoid, sordes on tongue, enlarged spleen, suggested typhoid. When first seen the patient had been running a temperature of from 102 to 103.5 F. for about eleven days, but the Widal tests were negative, and on the 12th day the temperature came down to 98.6 F. In exophthalmic goiter there sometimes is a rise of temperature with enlarged spleen, and it behooves one to make a careful physical examination.

New York Medical Journal

October 29

8 *Two Cases of Revolver Shot Wound of the Brain. J. C. DaCosta, Philadelphia.
9 A Simplified Technic for Roentgen-Ray Localization of Bullets in the Thicker Portions of the Body. S. Tousey, New York.
10 A Scientific Interpretation of Kuatsu, or the Japanese Method of Restoring Life. A. Abrams, San Francisco.
11 Circinate Syphilides. J. Kingsbury, New York.
12 *Fulguration Treatment of Papillomata of the Bladder. L. Buerger and A. L. Wolbarst, New York.
13 Surgical Treatment of Chronic Gastric and Duodenal Ulcer, and of Cancer of the Stomach. W. D. Hamilton, Columbus, O.
14 *Variability of the Gastric Juice. E. L. Eggleston, Battle Creek, Mich.
15 Shakespeare's Knowledge of Medicine. M. Kahn, New York.
16 Anemic Ulcers of the Throat. A. G. Pohly, New York.

8. **Gunshot Wound of Brain.**—In the first case cited by DaCosta a No. .22 bullet was lodged in the brain for eight months, producing amnesia and convulsions. It was removed successfully. Convulsions were arrested but the amnesia was not improved. In this patient the shock caused partial amnesia; the bullet, encysted just beneath the cortex, caused convulsions, and DaCosta suggests that in all probability, when the tearing loose of the bullet from the wall which encysted it took place, the bullet moved about and the irritation led to the development of status epilepticus. An interesting fact is that a No. .22 bullet should have pierced an ordinary thick skull and reached the opposite side of the head. In the second case, a bullet of .32 caliber, in the brain for over four weeks, caused violent headache and was successfully removed with complete recovery. The bullet was lodged in the falx and against the superior surface of the straight sinus. The whirr of the blood in that sinus was very distinct as the finger pushed against the bullet. The falx was incised, the bullet was exposed and removed with bullet forceps. On its removal there was a great gush of blood, presumably from the sinus. The bleeding was arrested by gauze packing which made much pressure on the falx and tentorium. Because of the large amount of gauze employed, the fear of further hemorrhage, and the apprehension as to the results of compression, the bone flap was removed and the scalp sutured about the protruding gauze. The man reacted quickly from the ether and a few hours after the operation was perfectly conscious and free from pain. The packing was not removed for nine days. On its removal there was no bleeding. The patient at present is in excellent health.

12. **Fulguration of Papillomata.**—The authors found that the de Keating-Hart method of fulguration of tissues when applied to bladder papillomata, in the manner suggested by Beer, offers an easy and reliable mode of treatment. Local anesthesia applied to the bladder is sufficient to eliminate pain. Three cases of bladder papilloma, in this series, responded excellently to this method of treatment. Apparently a cure has followed in each case.

14. **Variability of Gastric Juice.**—From Eggleston's experimental studies it would seem that with the same food materials there may be a marked variation in the percentage of composition of the gastric juice which may result from psychic influences. Iced foods or beverages have only a slight inhibitory action on gastric secretions. Foods containing free fats in any quantity when taken either at ordinary temperature or frozen have a decided inhibitory effect on gastric secretions. Fruit juices either frozen or at ordinary temperature quite markedly increase the secretion. Compound tincture of gentian seems to have but little effect as a gastric stimulant.

Boston Medical and Surgical Journal

October 27

17 Cholelithiasis. R. F. Chase, Boston.
18 Wassermann Reaction for Syphilis. W. F. Boardman, Boston.
19 *Technic of Arthrotomy. C. F. Painter and A. P. Cornwall, Boston.
20 Extreme Blood Picture In a Case of Pernicious Anemia. W. C. Speidel, Chicago.

19. **Arthrotomy.**—The fifty cases cited by Painter and Cornwall, belonging to the group of lipomata, show forty-four restorations to normal function without infection and without any very protracted convalescence. Six cases were infected; two of the patients died. Of these one was doubtless infected from another patient operated on unadvisedly at the same time and in the same room. The other was a patient who had both knees operated on at the same time, which is now regarded as a technical error. The four other septic cases were not explained, except in one case, and this patient now has a normal joint. The authors hold that this should not be classed strictly as a sepsis, for the joint was scalded by water used to check synovial hemorrhage and the larger part of the synovial membrane sloughed out. One of the patients, in whom both joints were also operated on at one sitting, lost her leg above the knee. There is a good deal of evidence that this was a syphilitic subject, but this is not offered in extenuation of the results. If it was, it was just as much an error to have operated it as it was to have infected it. A better showing might be made if the double cases were counted as separate operations, but they have not been so counted. The authors regard it a serious error to do both knees at one sitting. The next largest group of cases for which arthrotomies have been performed at this clinic has been that in which the removal of tuberculous disease has been undertaken. The technic of these operations is described and a brief report of the cases is begun. The article is to be concluded in a subsequent issue of the journal.

Lancet-Clinic, Cincinnati

October 22

21 Psychotherapy Minus the Mystery. I. O. Allen, Richmond, Ind.
22 Rôle of the Physician, Philanthropist, Publicist and Politician Regarding a Federal Department of Health. L. H. Montgomery, Chicago.
23 Albinism in its Relation to Medical Research. B. Holmes, Chicago.

October 29

24 *Responsibility of the Physician in Traumatic Neuroses. H. H. Drysdale, Cleveland.
25 Foods in Tuberculosis. P. Paquin, Asheville, N. C.

24. Abstracted in THE JOURNAL, Sept. 24, 1910, p. 1134.

Ohio State Medical Journal

October 15

26 Circulatory Changes in Exophthalmic Goiter. A. W. Hewlett, Ann Arbor, Mich.
27 Radical Treatment of Internal Hemorrhoids. J. A. Duncan, Toledo.
28 Vaccine Treatment of Tuberculous Cervical Adenitis in Children. O. Berghausen, Cincinnati.
29 Infantile Paralysis from the Standpoint of the Orthopedist. A. M. Steinfeld, Columbus.
30 *Exudative Erythemas and Their Visceral Manifestations. M. A. Brown, Cincinnati.
31 Hematuria. W. E. Lower, Cleveland.
32 Non-Operative Treatment of Otitis Media. W. L. Carroll, Youngstown.

30. Abstracted in THE JOURNAL, July 16, 1910, p. 246.

Journal of Infectious Diseases, Chicago

October 25

33 *Balantidium Coli Infection in Man. G. S. Bel and M. Couret, New Orleans.
34 *Influence of Extracts of *Anchylostoma Caninum* on the Coagulation of the Blood and on Hemolysis. L. Loeb and M. S. Fleisher, Philadelphia.
35 *Determination of the Number of Body Cells in Milk by a Direct Method. S. C. Prescott and R. S. Breed.
36 Formaldehyd Disinfection with Special Reference to the Comparative Value of Some of the Proprietary Products. M. L. Holm and E. A. Gardner, Lansing, Mich.
37 *Bacterial Integrity of Collodion Sacs. C. A. Fuller, Madison, Wis.
38 *Value of Collodion Membranes as Filters. E. Steinhardt, Ann Arbor, Mich.
39 Non-Inheritance of Impressed Variations in *Streptococcus Lacticus*. R. E. Buchanan and R. Truax, Ames, Ia.
40 *The Anti-Infectious Power of the Blood of Infants. R. Tunnicliff, Chicago.

33. **Balantidium Coli Infection.**—Bel and Couret have repeatedly found *Balantidium coli* in large numbers in the stools of patients during life; they have found them active and very numerous about the lesions at necropsy. They have found *Balantidium coli* in sections of the glands of the large intestine and interglandular supporting tissue, the submucous coat, and in the blood vessels, and, wherever the parasites were present, lymphoid and plasma cells and eosinophils were constantly in evidence, whereas the absence of such cellular infiltration foretold a negative finding of the parasite. They believe that ulcerations are due to terminal invading bacteria, as evidenced by their acute character, and while they do not doubt that *Balantidium coli* is primarily responsible for their presence by producing avenues for the entrance of these bacteria, the absence of parasites from the walls of these ulcers is sufficient evidence that they play no further part in their production.

From their study of the intestinal flora and the negative blood-reactions for specific agglutinations, the authors are satisfied that any of the bacteria normally present in the intestine of man may produce the ulcerations after *Balantidium coli* has opened the avenues for infection. They believe that *Balantidia* produce these definite lesions (hyperplasia and cell infiltration) either mechanically or through the liberation of cytolytic ferments. The presence of the parasite in blood-vessels and lymph-spaces leaves no doubt that infection of the liver and lung may occur through these channels in a manner similar to that described by Gage in an invasion of the lungs by *Strongyloides intestinalis*, or as frequently hap-

pens in intestinal amebiasis. Finally, from the definite and microscopic findings and negative blood and culture results for other intestinal invaders, the logical conclusion seems to be that *Balantidium coli* is not a harmless commensal, as some authors suppose, but an organism able to invade the human tissues and cause a serious disease. Death may follow through compression of the intestinal glands by a hyperplasia of interglandular tissue produced by the parasites and through glandular necrosis and absorption of toxins from any terminal bacterial invasion.

34. **Influence of Anchylostoma Caninum on Hemolysis.**—Loeb and Fleisher found that in the anterior part of anchylostoma a substance is present that inhibits the coagulation of the blood; it can be preserved for a long time in a dried condition. It is not analogous to hirudin, but it seems to show some similarity to the substance inhibiting the coagulation of the blood which is present in cobra-venom. It will, however, be necessary to make additional comparative tests, they state, before such a relationship can be considered proved. The powder of anchylostoma which Loeb and Fleisher used did not contain a direct hemolytic substance, nor a substance which can be activated through a combination with lecithin.

35. **Determination of the Number of Body Cells in Milk.**—By the method described by Prescott and Breed, the number of cells present is determined by a direct examination of the milk without recourse to the centrifuge. The sample is well shaken to distribute the cream equally through the milk. A measured drop (0.01 c.c.) is then withdrawn by means of a specially constructed capillary pipette with a rubber bulb. This drop is then spread evenly over an area of 1 square cm. on an ordinary glass slide. The milk is then dried with gentle heat, the fat dissolved out with xylol or other fat solvent, the smear fixed to the slide by immersion in alcohol for a few minutes, dried, overstained with methylene blue, and decolorized with alcohol. The slide is then ready for examination. When well done the smear presents an even appearance and the cells show up clearly on a bluish field. This background is the dried casein and other milk solids, and shows holes where the fat drops have been removed. The determination of the number of cells present is made with the microscope, using the oil-immersion lens. If the diameter of the field is so arranged that it equals 0.16 mm., then each field covers approximately 0.005 of a square centimeter. This adjustment may be made by the use of the draw tube of the microscope. On this basis each cell seen in a field taken at random represents 500,000 cells per c.c. If 100 fields are counted and the total number of cells seen be obtained, then each cell represents 5,000 cells per c.c. This reduces the probable error to a smaller amount than would be necessary for routine work. A series of thirty-one tests done in duplicate where 100 fields of the oil-immersion lens were counted on each smear shows a variation of 14.5 per cent. These tests showed that the average number of cells present in milk is approximately 1,500,000 per cubic centimeter. Very few samples contained less than 100,000 cells per cubic centimeter. One test of milk having a normal appearance and sold as market milk showed 10,690,000 cells per cubic centimeter.

37. **Bacterial Integrity of Collodion Sacs.**—In Fuller's hands, the collodion sac method has given uniformly good results. Sacs filled with sterile water and immersed in water or sewage showed no passage of bacteria through the sac membrane for a week or more. With a view of proving that collodion sacs can be made so that they will remain unbroken for a period many times longer than that required to carry out the experiment cited, the following tests were made: Sacs were exposed to conditions most favorable to the passage of bacteria through the membrane, either by "growth" or "direct passage." The organisms tested were *B. typhosus*, *B. coli*, *B. prodigiosus*, and *B. pyocyaneus* and the bacteria of crude sewage and septic-tank effluent. Sacs were made by the method recommended by Frost. The majority of collodion sacs tested retained their bacterial integrity for 60 days or longer. Six sacs were inoculated with *B. pyocyaneus*. Growth in the medium surrounding one of these developed in 6 days; the organism escaped from another in 8 days. The four remaining sacs held perfectly for 60 days, three of them were discontinued but the fourth was allowed to run on and held germ-tight for 127 days. Subcultures from this sac showed actively motile bacilli, developing the deep-green pigment characteristic of *B. pyocyaneus*. *B. prodigiosus* is also retained by collodion sacs for a considerable time. Of the four tests made, one sac held for 41 days and three over 60. Up to the time of writing one sac had held 174 days. Pure cultures of *B. prodigiosus* were obtained from this sac 170 days after inoculation.

Four out of five sacs, inoculated with different strains of *B. coli*, held for 60 days, and two sacs which were kept under observation longer retained the organism for 174 days. Pure cultures of *B. coli* were recovered from both of these sacs. Fifteen sacs were inoculated with *B. typhosus* in pure culture. Of these one held 49 days, two held 59 days, and twelve held over 60 days; eight of these sacs were kept under observation and still retain the organism with which they were inoculated at the time of writing (137-270 days). In addition to the pure cultures used in these experiments, five sacs were filled with sewage and heavily seeded with suspension of typhoid organisms; three sacs were filled with crude sewage, and two with septic-tank effluent. All five sacs held 60 days and one (septic-tank effluent plus typhoid) retained its bacterial integrity 140 days after inoculation.

38. **Value of Collodion Membranes as Filters.**—In the experiment made by Steinhardt dilute diphtheria toxin was retained by the collodion membrane, while the undiluted toxin passed through freely. When dilute cobra venom was filtered, all toxicity was lost. On filtering successive quantities through the same collodion membrane, the filtrate gradually became toxic, until the fourth filtrate was practically of the same strength as the control. This result is in accord with the work of Marbe on the successive filtration of agglutinins through collodion sacs, and also with the gradual passage complement through a Berkefeld filter as shown by Steinhardt and later found by Muir and Browning working on the same subject. Evidently filtration through collodion sacs, as through Berkefeld filters, is a phenomenon of absorption, the substances in solution passing through when absorption has reached a certain degree. Formed particles, however, if able to pass through at all, would pass through more rapidly in the beginning of filtration, and later, as the pores become clogged, they would be retained, while the opposite would occur with soluble substances, which appear in the filtrate only after absorption has become more or less complete. Thus, by changing the concentration, the quantity to be filtered, or the thickness of the sac, results may be obtained varying from total retention to complete passage of the active substances through the collodion membrane.

40. **Anti-Infectious Power of Blood of Infants.**—The results of Tunnicliff's experiments would indicate that at birth the opsonic power of the blood-serum toward streptococci, pneumococci, and staphylococci is a little less than that of the adult serum. It falls still lower during the first months of life and does not equal the opsonic power of adult serum until about the second year. The phagocytic activity of the leukocytes of infants toward streptococci, pneumococci, and staphylococci follows a course similar to that of the opsonic indices. The leukocytes at birth are a little less active than adult leukocytes. Their activity diminishes considerably during the first months of life and does not reach that of adult leukocytes until about the third year. The phagocytic power of the whole blood of infants drops decidedly during the first and second months of life and does not reach that of adult blood until about the third year. During the first and second years of life the anti-infectious power of the blood, as measured by the opsonic power of the serum and the phagocytic power of the leukocytes, is far below that of adult blood.

Colorado Medicine, Denver

October

41 Medical Centers. L. Freeman, Denver.
42 Injuries to the Cornea. M. Black, Denver.
43 Lumbar Anesthesia and Rhachi-Anesthesia. Z. v. Dworzak, Denver.

Southern California Practitioner, Los Angeles

October

44 Ehrlich-Hata "606." L. Fischer.
45 Lambert Treatment for Narcotic Addiction. E. H. Sawyer, Banning, Cal.
46 Public Health Administration in Arizona. E. S. Godfrey, Phoenix, Ariz.
47 Animal Experimentation In Relation to Modern Medicine. H. Sherry, Pasadena, Cal.

Journal of the Minnesota State Medical Association and the Northwestern Lancet

October 15

48 The State Medical Association and its Relation to the Problems of the Day. W. A. Jones, Minneapolis.
49 A Case of Triplets. H. McGulgan, Mazeppa, Minn.
50 Medical Treatment of Exophthalmic Goiter. J. E. Crewe, Rochester, Minn.
51 *Fracture of the Clavicle. J. B. Brimhall, St. Paul.

51. **Fracture of the Clavicle.**—The comfort of the patient demands that these injuries be treated by a method which insures a perfect result, and at the same time is comfortable during the 3 or 4 weeks of repair. This is sought by the use of a figure-of-eight plaster of Paris dressing, which Brimhall applies as follows: The patient is dressed in a gauze or cotton undershirt and placed either in the standing posture or sitting on a chair facing the back of the chair. Sufficient sheet-cotton wadding is placed over the shoulders and both scapulæ, and a few turns are carried around the shoulders and through the axillæ. Plaster-of-Paris bandages, 2½ or 3 inches in width, are applied in a manner as suits the operator in accomplishing the purpose, a simple way being to apply the bandages in the form of an X, letting the upper poles extend over the top of the shoulder and well down on the anterior aspect of the same, the lower poles of the X reaching the lower angles of the scapulæ. The scapulæ will be well covered by the plasters as the bandage is alternated from one side of the X to the other. Brimhall says that it is advisable to drop the dressing lower on the side of the injury that this scapulæ may be well grasped. About every fourth layer of the bandage may be carried down the anterior surface of the shoulder and back through the axilla, thus molding the plaster dressing about the shoulder. Use sufficient bandages to make a strong dressing, there being little objection to a heavy dressing as the weight is so distributed that it is not noticed. The shoulders may be held by an assistant, although this is not really necessary as the application of the figure-of-eight turns of the bandage will keep the position, after being first properly placed by the operator, and some member of the family usually assists by supporting the arm of the injured side. Both arms are allowed to come to the patient's sides while the plaster is hardening, keeping both shoulders held in the desired position. If there seems to be too much plaster applied in front and through the axillæ this can easily be removed with a sharp pen-knife after the cast has hardened and while it is still moist. This fixed dressing practically prevents movements of the fragments. Both arms are left free and useful. Clothing can be worn as usual. By opening the shirt in front, perfect hygiene of the axillæ may be maintained.

New Mexico Medical Journal, East Las Vegas

October

52 Hereditary Influences of Tuberculosis and Syphilis. J. W. Tinder, Roswell.
53 *The Family Physician in Relation to the Specialist. T. S. Dabney, New Orleans.

53. Published also in *New Orleans Medical and Surgical Journal*, October, 1910.

Iowa Medical Journal, Des Moines

October 15

54 What Next in the Campaign Against Tuberculosis in Iowa? J. W. Kime, Fort Dodge.
55 Myocarditis. M. Bannister, Ottumwa.
56 The Profession of Medicine. W. Woodbridge, Central City.
57 Treatment of Chronic Heart Disease. W. L. Bierring, Des Moines.

Surgery, Gynecology and Obstetrics, Chicago

October

58 *Appendiceal Intussusception. W. L. Wallace, Syracuse, N. Y.
59 Diagnostic Possibilities of Skiagraphy of the Vas Deferens. L. E. Schmidt and H. L. Kretschmer, Chicago.
60 Surgery of the Esophagus. W. Lerche, St. Paul, Minn.
61 Periodic Intermenstrual Pain. N. S. Heaney, Chicago.
62 *Intestinal Perforation in Typhoid, and Treatment. C. Bagley, Baltimore.
63 Care of the Puerperal Woman. I. H. Eddy, Chicago.
64 *Cesarean Section for Impassable Contraction Ring. R. L. Dickinson, Brooklyn, N. Y.
65 *Malignant Rhabdomyoma of the Vagina in Children. C. J. Miller and F. B. Gurd, New Orleans.
66 *Conservative Surgery of the Pelvic Organs in Cases of Pelvic Peritonitis and of Uterine Myomata. J. G. Clark and C. C. Norris, Philadelphia.
67 Total Congenital Absence of the Appendix. U. G. Daily, Chicago.
68 Cholecystitis Complicating Typhoid. E. M. Prince, Birmingham, Ala.
69 *New Technic for Operations on the Liver. J. Frank, Chicago.
70 Cesarean Section Under Local Anesthesia. R. K. Smith and J. Schwarz, San Francisco.
71 Abdominal Palpation and Auscultatory Percussion. T. J. Watkins, Chicago.

58. **Appendiceal Intussusception.**—Wallace's patient had his first attack of lower right abdominal inflammation in October, 1909, lasting 3 days and occurring after an unreasonably hearty, indigestible meal. One month later he had a second attack lasting a week, much harder than the first, with severe pain and tympany. The third attack commenced suddenly December 23, 1909, 5 weeks before coming to the hospital, with very severe pain and rapid distention. A bunch, which would rise up when he had pain, was soon noticed in the right side. Each pain was hard, lasting from 2 to 4 minutes, and recurring with short intermissions, often waking him up in the night. These attacks had been frequent for 5 weeks, the last severe attack beginning 4 days before coming to the hospital, and lasting 2 days. He had been very constipated during his attacks, but had never had vomiting, tenesmus, piles, or blood in the stools. Jan. 31, 1910, temperature was 99; pulse, 88; white blood count, 10,200, 86 per cent. polynuclears. Examination of the urine showed specific gravity 1021, no albumin, sugar, casts, blood or pus. The abdomen was not rigid or distended. A bunch which seemed about the size of a lemon was evident in the right inguinal and lumbar regions about 1 inch internal to the anterior superior spine of the ilium, movable back and forth and not very tender. This mass seemed probably a growth in the cecal region, possibly an inflammatory mass from an old appendicitis.

Wallace opened the abdomen externally to the right rectus and found an intussusception in the ileocecal region extending to the middle of the transverse colon, dragging in the cecum and ileum. There was no strangulation of the large or small bowel and there were no adhesions. The ileum was easily squeezed back out of the colon, leaving the much thickened and inflamed cecum tightly inverted into the colon, with the appendix buried in the pit at the end of the cecum. The colon was contracted on the cecum and the cecum on the appendix. Wallace could not withdraw the appendix from the cecum and had to cut out the end of the cecum with the appendix. Then it was seen that there was a mass within. This was the base of the appendix inverted into the cecum. The piece of cecum cut out around the appendix formed a collar, distal to which was a large inflamed appendix invaginated into the inverted cecum, and proximally to which was a large, black, almost gangrenous inversion of the base of the appendix into the cecum. The appendix did not lie loosely as in a bag, but both the invaginated and inverted portions were tightly grasped. The mesentery of the appendix was very narrow and not badly damaged. The cecum and ascending colon had a very long mesentery and were very movable.

62. **Intestinal Perforation in Typhoid Fever.**—In Bagley's series of seven cases, three patients died without surgical interference. The remaining four were operated on, with but one death, giving a recovery rate of 75 per cent. in patients operated on.

64. Abstracted in THE JOURNAL, June 11, 1910, p. 1994.

65. **Malignant Rhabdomyoma of the Vagina.**—A tumor is occasionally encountered in the vagina in female infants, characterized by rapid growth and the development of polypoidal masses projecting into the lumen of the vagina. Histologically this tumor is found to be composed of embryonic striped muscle tissue; hence, it is a rhabdomyoma. Growth is by expansion and the neoplasm does not metastasize; as a result the author believes that complete removal

locally ought to result in cure, although only two such cases are now on record. He reports one fatal case.

66. **Surgery of the Pelvic Organs.**—Clark and Norris consider that it is advisable that almost all patients with inflammatory pelvic conditions be subjected to a course of preliminary treatment before operation. By this method, some patients will escape operation entirely while the others can be operated on more easily, more quickly, and with less mortality. A greater number will also be found suitable for conservative operation. If possible from 4 to 6 weeks of normal temperature and blood counts should precede each operation. If pus be present which can be easily reached without traversing the peritoneal cavity it should be evacuated at once. The end-results of salpingostomies are disappointing. Pregnancy rarely takes place, as the newly formed ostii quickly become occluded and cause a recurrence of symptoms. Conservation of a grossly normal tube in the presence of diseased appendages on the opposite side offers good results, especially if a course of preliminary treatment has been followed out prior to operation.

Conservatism of macroscopically diseased tubes is unsatisfactory. Conservative ovarian surgery offers excellent results, provided that the ovarian circulation be not impaired and that the organ be left in good position. In selected cases, ovarian resection offers excellent results. A small amount of ovarian tissue left behind will usually avert the sudden onset of the menopause. When it is found necessary to remove both ovaries a hysterectomy should also be performed. Such uteri are useless and often cause subsequent trouble. If it is necessary to remove the uterus, and one or both ovaries can be spared, their preservation will prevent the unpleasant symptoms of the artificial menopause. For although menstruation will cease, the neuroses, which are the worst symptoms of the menopause, will be absent. In cases of uterine myomata, hysteromyomectomy is the operation of choice in the majority of cases. Whenever performing this operation on menstruating women both ovaries should, if possible, be spared. By performing a hysteromyomectomy and leaving one or both ovaries, the severe symptoms of the artificial menopause will be averted. Myomectomy is the operation of choice for young women. Its chief advantage over hysteromyomectomy is that the possibility of pregnancy is preserved. Its relative danger as compared with hysterectomy depends on the individual case.

69. **Operations on the Liver.**—Frank's original article on this subject was published in THE JOURNAL, Aug. 12, 1905, p. 446.

Proctologist, St. Louis

September

72 *Undergraduate Proctology. D. H. Murray, Syracuse, N. Y.
73 Proctologic Literature from March, 1909, to March, 1910. S. T. Earle, Baltimore.
74 *Malformations of the Anus and Rectum. A. B. Graham, Indianapolis.
75 *Quinin and Urea Hydrochlorid as a Local Anesthetic in Anorectal Surgery. L. J. Hirschman, Detroit.
76 *Atony of the Rectum. W. M. Beach, Pittsburg, Pa.
77 *Villous Tumor of the Rectum. T. C. Hill, Boston.
78 *Significance of Rectal Hemorrhage. L. J. Krouse, Cincinnati.
79 *Anorectal Affections of Infancy and Childhood. A. J. Zobel, San Francisco.
80 Treatment of Rectal Fistula. J. R. Pennington, Chicago.
81 *Tuberculin Reaction in Perirectal Infection. C. F. Martin, Philadelphia.
82 *Lane's Conception of Chronic Constipation and its Management. A. B. Cooke, Nashville, Tenn.
83 Laceration of the Sphincter Ani. A. B. Cooke, Nashville, Tenn.
84 Multiple Adenomata. G. W. Combs, Indianapolis.
85 Pathology of Multiple Adenomata of the Rectum. J. M. Lynch, New York.
86 *Skin Manifestations of Amebiasis. J. L. Jelks, Memphis, Tenn.
87 *Incontinence Following Rectal Operations. G. B. Evans, Dayton, O.
88 *Irritable Ulcer of the Rectum in Pregnant Women and the Part it Plays as a Factor in Abortion. L. Straus, St. Louis.
89 Localized Dermatitis Following the Use of Quinin and Urea as a Local Anesthetic. A. Hebb, Baltimore.
90 Review of the History of the American Proctologic Society From its Organization in 1899 to date. L. H. Adler, Philadelphia.
91 Cecostomy and Appendicostomy. S. G. Gant, New York.
92 *A Case of Postoperative Delirium. S. T. Earle, Baltimore.
93 *Appendicostomy: A Consideration of the Preservation of the Blood Supply of the Appendix in the Technic of the Operation. F. C. Yeomans, New York.
94 Fibrosis of the Rectum. J. A. MacMillan, Detroit.

72, 74, 76, 77, 78, 79, 81, 82, 87, 88, 92 and 93.—Abstracted in THE JOURNAL, July 30, 1910, pp. 430, 431 and 432.

75. Published in the *Lancet-Clinic*, July 9, 1910.

86. Published in the *Journal of the Tennessee State Medical Association*, July, 1910.

University of Pennsylvania Medical Bulletin, Philadelphia

October

95 *Treatment of Leg Ulcers. B. A. Thomas, Philadelphia.
96 Treatment of Various Skin Lesions with Carbon-Dioxid Snow. F. Prime, Philadelphia.
97 Fractures of the Metacarpal Bones. J. Speese, Philadelphia.
98 *Mixed Tumors of the Kidneys. D. B. Pfeiffer, Philadelphia.
99 The Medical Side of Benjamin Franklin. W. Pepper, Philadelphia.

95. **Treatment of Leg Ulcers.**—From an experience of several years in hospital out-patient services, Thomas is convinced that the gelatin-glycerin-zinc-oxid paste dressing is infinitely superior to any other known form of treatment for the cure of leg ulcer. The paste is prepared in the following manner: Two parts of the purest gelatin are dissolved by means of a hot-water bath in 5 parts of water. While the mixture is still hot, 5 parts of glycerin and 2 parts of powdered white oxid of zinc are energetically stirred in until the whole is cool. At room temperature the paste assumes the consistency of ordinary table gelatin or soft rubber. It may be preserved from time to time in this state. Just prior to its application the paste is liquefied in a hot-water bath; then cooled sufficiently that it will not injure the skin. In the meantime the leg and foot of the patient are thoroughly cleansed with water and soap (preferably tincture of green soap), alcohol, bichlorid of mercury 1 to 2,000 to 1 to 4,000, or a solution of carbolic acid 1 to 100. The ulcer is likewise disinfected with peroxid of hydrogen and a solution of bichlorid or carbolic acid. The surface must then be thoroughly dried before the paste is applied. The paste is then made to cover the entire surface from the metatarsophalangeal articulations to the tubercle of the tibia. A layer of gauze is then applied, most satisfactorily from a 3-inch roller cut at intervals to avoid excessive overlapping and wrinkles. This is supplemented by another layer of paste, then a second thickness of gauze, until three or four layers of the bandage have been applied, finishing with the gelatin-glycerin-zinc-oxid paste mixture. Inasmuch as the paste is rather gummy or sticky, making it disagreeable to the fastidious patient, Thomas has been in the habit of applying a coating of shellac, as soon as the dressing has solidified. The application of a very thin layer of non-absorbent cotton, talcum powder or bandage, temporarily, will answer the same purpose.

In not a few cases this dressing may be allowed to remain *in situ* for from 2 to 8 weeks, and when removed the ulcer will be found to have healed. The safer procedure to adopt, however, is to have the patient report again in 2 days. If in that time there is evidence of suppuration or discharge at the ulcer site, manifested by a saturation of the overlying dressing, as is frequently the case, the dressing must be fenestrated, the ulcer cleansed, and a dry dusting powder, such as salicylic and boric acid, talcum, bismuth oxyiodid, methylene digallate, or thymolis iodidum, supplemented by a simple gauze dressing, applied. In such a case it is essential that the patient return two or three times weekly for renewal of the gauze dressing. Should the paste dressing become loose, by virtue of the subsidence of the swelling of the leg, it must be removed and a fresh one applied. Thomas has never found it necessary to scarify, curette, or excise the bed or edges of a so-called indolent ulcer, nor to apply any stimulant or cauterant of any description in order to effect healing.

98. **Mixed Tumors of the Kidney.**—Pfeiffer reports two cases of mixed tumor, one (rhabdomyoma) springing from the kidney itself, the other (embryoma) in immediate relation to it. He reviews the literature on the subject, analyzing seventy-eight cases.

Annals of Ophthalmology, St. Louis

October

100 Congenital Pigmentation of the Cornea. T. B. Holloway, Philadelphia.
101 Acute Glaucoma Treated with Subconjunctival Injections of Sodium Citrate. I. M. Heller, New York City.
102 Traumatic Enophthalmos. A. C. Sautter, Philadelphia.

103 Bitemporal Hemianopsia with an Unusual Clinical History. W. Zentmayer, Philadelphia.
104 Medical Advertising in Remote Times. S. H. Brown, Philadelphia.

New Orleans Medical and Surgical Journal

October

105 Early Recognition and Treatment of Tuberculosis. J. Kilbourne, Ethel, La.
106 *The Family Physician in Relation to the Specialist. T. S. Dabney, New Orleans.
107 Examination of the Female Genital Organs. P. B. Salatich, New Orleans.
108 Distribution of Uncinariasis in Louisiana. A. Eustis, Abbeville, La.
109 Symptoms and Diagnosis of Uncinariasis. C. C. Bass, New Orleans.
110 Anchylostomiasis. A. Delcourt, Houma, La.
111 Treatment of Uncinariasis. W. E. Sistrunk, Lake Charles, La.
112 Relation of Corn Products to Pellagra. J. N. Thomas, Pineville, La.

106. Published also in *New Mexico Medical Journal*, October, 1910.

Archives of Pediatrics, New York

October

113 Factors in the Conservation of Child Life. H. L. Coit, Newark, N. J.
114 *Pediatrics and Otiatrics. E. Gruening, New York City.
115 *Temperature Changes in Infants as an Indication for the Mastoid Operation. F. Whiting, New York City.
116 Management of Poliomyelitis and its Sequelæ. H. L. Taylor, New York.
117 *Acute Pericarditis in Children. D. Bovaird, Jr., New York.
118 Psychasthenia in a Child Aged Two Years, Due to Drinking Coffee. T. A. Williams, Washington, D. C.

114. Published also in the *Laryngoscope*, August, 1910, p. 801.

115. **Indication for the Mastoid Operation.**—Although Whiting does not advocate delay in operating for mastoiditis in children after convincing signs of the disease have manifested themselves at the fundus of the ear, he deprecates the attitude of the surgeon who with injudicious haste proceeds to operation simply because high temperature is present and it cannot be demonstrated that mastoiditis does not exist. He says that to operate for mastoiditis in infants on temperature manifestations supported only by blood-counts and without corroborative evidence in the form of inflammatory changes at the fundus of the ear displays not only a lack of conservation but a selfish disregard for the welfare of the patient.

117. Abstracted in THE JOURNAL, June 11, 1910, p. 1998.

Memphis Medical Monthly

September

119 Diagnosis of Typhoid. W. Krauss, Memphis.
120 Treatment of Typhoid, with Special Reference to Diet. W. T. Pride, Memphis.
121 Plea for the Education of the Public to the Seriousness of Gonorrhea. G. R. Livermore, Memphis.
122 Acute Inflammatory Rheumatism. D. A. Walker, Trenton, Tenn.
123 Bisection of the Uterus. F. D. Smythe, Memphis.

Therapeutic Gazette, Philadelphia

October 15

124 Treatment of Ocular Tuberculosis and of Corneal Infections with Vaccines or Bacterins. G. E. de Schweinitz, Philadelphia.
125 *A Fatal Case of Postpartum Hemorrhage of Obscure Origin. W. H. Wells, Philadelphia.
126 Clinical Importance of Occult Blood in the Separate Urines Obtained by Ureteral Catheterization. T. C. Stellwagen, Philadelphia.
127 Etiology and Rational Treatment of Chronic Constipation. B. Kohn, Philadelphia.

125. **Postpartum Hemorrhage.**—The patient whose history is under consideration went into labor Dec. 16, 1907—11 days after her calculated date. It was a case of breech presentation. The breech entered the pelvic inlet with the greatest ease, the membranes being as yet unruptured. The only peculiarity noticed about her during her labor was that she seemed to be abnormally drowsy. There was no enlargement of the thyroid. The body of the child came down easily and was born without the slightest difficulty, but for some reason, probably from the rapidity with which the body was born, the head did not flex very well. There was some slight difficulty in delivering the after-coming head, although not very much. The child, which was a large female, weighing about 9 pounds, was living and in good condition. Following the expulsion of the placenta—which occurred soon after the birth of the child—there was a rather sharp postpartum hemorrhage. This Wells controlled by the administration of ergot, an intrauterine douche of a gallon of a 2 per cent. lysol solution and packing with gauze. The delivery of the child occurred at 1:30 p. m.

About 3 p. m. the patient was becoming pale and the uterus was rapidly relaxing. Wells removed the packing and this was followed by a tremendous flow of blood. The blood was unusually dark in color, and did not clot at all. It seemed to be absolutely deficient in clotting power. Notwithstanding the fact that every method usually employed to combat postpartum hemorrhage was used, the patient died about 5 o'clock. During all the efforts in the patient's behalf the uterus could not be made to contract at all. If it was compressed by the hand in one portion it simply relaxed in another. The only method of treatment not employed was the ligation of the uterine and ovarian arteries, and for that there was no time because the hemorrhage occurred so rapidly that by the time the usual methods had been used the patient was too far gone to admit of operation, either through the abdominal or vaginal route. Wells examined the patient after delivery most carefully for lacerations, and there were none either in the perineum, vagina, cervix, or body of the uterus. Indeed, there would have been no cause for laceration, as the external parts had been well dilated by a previous delivery and the birth canal was so large that the child came down with the greatest ease, the only trouble being a slight extension of the head, which was easily corrected.

Chicago Medical Recorder

October 15

128 Rectal Feeding. C. J. Drueck, Chicago.
129 Duties of the Individual Physician in Extinguishing Typhoid. W. F. Waugh, Chicago.

American Journal of Urology, New York

October

130 Embryoma of the Kidney with Interesting Features: Fibriuria; and Disappearance of Vesical Tumor. G. C. Crandall and B. Lewis, St. Louis.
131 Postoperative Treatment in Perineal Prostatectomy. W. N. Wishard, Indianapolis.
132 Urologic Atrocities. V. G. Vecki, San Francisco.
133 Urethral and Peri-Urethral Complications of Gonorrhea and Their Sequelæ. J. F. McCarthy, New York City.
134 A Perineal Belt for Retention of Dressings *in Situ*. G. S. Peterkin, Seattle, Wash.

Ophthalmology, Seattle, Wash.

October

135 Recurrent Tuberculous Chorioiditis. C. Koller, New York.
136 Sarcoma of the Optic Disc. G. D. Murray, Scranton, Pa.
137 Diagnosis of Subretinal Mass. R. L. Randolph, Baltimore.
138 Congenital Dislocation of the Lacrimal Gland. L. W. Jones, Rochester, N. Y.
139 Orbital Edema, with Proptosis, Resulting from Autointoxication. H. M. Becker, Sunbury, Pa.
140 Prism Tests with Presentation of a Series of Prisms Arranged on a Circular Disc. L. Howe, Buffalo, N. Y.
141 *The Art of Writing Without the Use of Eyes. J. N. Rhoads, Philadelphia.
142 Ocular Asymmetry of the Formosan Savage. C. A. Oliver, Philadelphia.
143 Eye Affections of the Negro, as Compared with the White Man. J. L. Minor, Memphis, Tenn.
144 Vision and the Menopause. F. A. Kiehle, Portland, Ore.
145 Ocular Signs Frequently Associated with Vasomotor Disturbances. H. F. Hansell, Philadelphia.
146 Three Hundred and Forty-Eight Cases of Injury to the Eyes. G. C. Hall, Louisville.

141. **Writing Without the Use of Eyes.**—Rhoads uses a device which enables him to write without the use of his eyes. The writing device is 10 inches wide and 8 inches long. It has two rollers, one in each end, and on them a long sheet of paper is rolled which is 15 to 20 feet long and 9 inches wide. The paper is fast, of course, to both rollers, but on the start is nearly all wound on the back roller, so that the paper may be rolled on the front roller line by line as it is written. Common screw eyes are screwed into one end of each roller, and are used to roll or unroll the paper. A slot ¼ by 1 inch runs across the box, and is the platform on which the writing is done, and over which the paper slips. A wire runs across the front of the lid or hand-rest and guides the pencil in the dark. The lid is hinged to facilitate changing the paper or for copying on the typewriter. To the underside of the lid is attached a loop in which is kept a pencil so that the machine is always ready. By using a

short pencil with this device Rhoads is able to write while lying flat on his back in bed with everything completely under the bed clothing, and therefore, is not at the mercy of a cold room when he wants to write. He has made for his own use a small pocket scroll on the same plan, which he uses in the cars. It may be used while it is still in the pocket when no eye strain can occur, or it can be used on the knee, with or without the use of the eyes. Besides stopping the deterioration of eyes, this machine will be a benefit to those who have become blind late in life, and who have not the opportunity to learn to write on a blind-man's typewriter. Rhoads suggests that high myopes, very high hyperopes, nicotin and alcoholic degenerates, and in fact all amblyopes, could be taught to attend to their business and be more useful by learning the art of writing without the use of the eyes.

Gulf States Journal of Medicine and Surgery, Mobile, Ala.

October

147 Prevention and Treatment of Postoperative Shock. C. A. Poellnitz, Greensboro, Ala.
148 Physicians and Their Business Methods. O. Dowling, Shreveport, La.
149 Aerophagia Nervosa. J. A. Storck, New Orleans.
150 Principal Causes of Death in Manila During 1909. I. W. Brewer, U. S. Army.
151 New Plan of Treatment for Delirium Tremens. G. E. Pettey, Memphis, Tenn.
152 Diseases of the Responsible. J. R. Oswalt, Pensacola, Fla.
153 Neglected Things in the Child's Development. M. McH. Hull, Atlanta, Ga.

Journal of Ophthalmology and Oto-Laryngology, Chicago

October

154 Choice of a Cataract Operation. W. A. Fischer, Chicago.
155 Surgery of the Middle Turbinate Body. A. H. Andrews, Chicago.

Virginia Medical Semi-Monthly, Richmond

October 21

156 Tuberculosis and Pregnancy. L. M. Allen, Winchester.
157 Value of Animal Experimentation with Reference to Operative Technic. C. C. Coleman, Richmond.
158 Mechanism of Speech and Some Speech Defects. E. B. McCready, Pittsburg, Pa.
159 A Brief Home-Office View of Life-Insurance Examinations. J. W. Carroll, Lynchburg, Va.
160 Amebiasis Without Dysentery. A. G. Brown, Richmond.

Kentucky Medical Journal, Bowling Green

October 1

161 Pharmacologic Consideration of Suprarenal Gland. V. E. Simpson, Louisville.
162 Occipito-Posterior Presentations. E. Speidel, Louisville.
163 Treatment of Gastric Ulcer. J. A. Sweeney, Louisville.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London

Oct. 15

1 *Education of the Medical Student. H. Marsh
2 *Acute Arthritis of Doubtful Origin. H. D. Rolleston.
3 Experiment and Observation in Medicine. J. A. Codd.
4 *Fever Caused by the Bite of the Sandfly. T. G. Wakeling.
5 Skiagrams of Multiple Renal Calculi and of Fractures Due to Muscular Violence. O. L. Rhys.
6 Diagnosis and Treatment of Non-Tuberculous Joint Diseases in Children. J. A. Coutts and E. M. Corner.
7 Conservative Treatment of Tuberculous Cripples. H. J. Gauvain.
8 Spinal Caries and Hip Disease. W. B. Parsons.
9 Infections of the Urinary Tract by *B. Coli* in Infancy and Childhood. C. R. Box, J. Pardoe and J. P. Parkinson.
10 *Combined Quinin and Hydropathic Treatment of Whooping-Cough. T. Zangger.
11 Early Diagnosis of Tuberculous Bronchial Adenopathy in the Child. A. D'Espine.
12 Acute Attack of Acetonemia in a Young Child. J. McCaw.
13 *Human Milk and Breast Feeding. O. M. Elgood.
14 Lesions of the Isolated Appendix in the Hernial Sac. H. T. Gray.
15 Banana Flour as a Food for Infants. E. Pritchard.
16 Radical Treatment of Tuberculosis of the Tarsus and Ankle-Joint. J. K. Murphy.
17 The Pharyngeal Tonsil. J. Symington.
18 Early Development of the Eustachian Tube and Naso-Pharynx. J. E. Frazer.
19 Size of the Antrum and Position of the Permanent Teeth. A. C. Geddes.
20 *Six Abnormalities from the Dissecting Room. A. C. Geddes.
21 Anatomy of the Trigonum Vesicæ. W. Wright and T. C. Benians.
22 Emanuel Swedenborg as an Anatomist. M. Ramstrom.
23 An Anencephalic Fetus, with a Meningocele and Facial Cleft. R. J. Gladstone.
24 Muscle of Treitz and the Plica Duodeno-Jejunalis. P. T. Crymble.
25 A Cyclops and Agnathous Lamb. R. J. Gladstone.
26 Congenital Absence of the Transverse Mesocolon. N. C. Rutherford.
27 Recent Researches on the Anatomy of the Bird's Heart. I. McKenzie and J. I. Robertson.

1. See Abstract 28.

2. **Acute Arthritis of Doubtful Origin.**—Rolleston cites cases to show that acute arthritis may be a manifestation of various diseases; but while some fevers are so constantly characterized by obvious cutaneous changes as to be grouped together as exanthemata, the occurrence of arthritic changes are less constant in well-recognized diseases. He does not know if it has ever been suggested from a teleologic point of view that the object of cutaneous rashes is to give warning that the individual is infectious; but the same spirit of final causes might urge that the reason why certain diseases, such as acute rheumatism and in some instances scarlet fever, affect the joints is that, by limiting movement, rest for the heart may be ensured. Teleologic explanations though attractive are dangerous, and this one will not stand much criticism The other point on which Rolleston insists, is that a weakness in resistance on the part of the joints, whether inherited or acquired, may determine inflammation in the joints in certain persons when attacked by an infection or disease which in ordinary persons is not characterized by arthritic manifestations. This probably accounts for the rare form of arthritis exceptionally seen in hemiplegia and paraplegia.

4. **Sandfly Fever.**—Wakeling describes a non-fatal, 3-days' fever, with a week's convalescence and certain sequelæ, due to the bite of the *Phlebotomus papatasii*. It is known to exist in Egypt, part of Austria, Malta, and in Italy; and, he thinks, it will probably be found widely distributed. The symptoms are local and general. The bite is followed by intense itching and irritation of the part, which persists, and which is followed by the formation of a raised lump with a small watery head, and with a surrounding zone of inflammation. As the flies bite at night, sleep may be prevented for some hours. The illness begins with a feeling of tiredness, loss of appetite, malaise, headache, aching in limbs, chilliness, and disinclination to do things; rigors are uncommon; vomiting sometimes occurs. The temperature rises sharply to 101 or 104 F. (less in recurrent attacks). There is a disordered digestion, furred tongue; constipation is marked, occasionally there may be diarrhea; the hands and feet are hot, the pulse is bounding and increased in rapidity. Blood-pressure is probably raised from the beginning. Later there is well-marked anemia and rapid loss of weight. There is a tendency to inflammation of synovial and pleural cavities, and to neuritis and headache. The micro-organism is probably not got rid of easily, and months after an attack, chill or exposure to wet may bring on another attack of fever, accompanied by effusion into synovial or pleural cavities, or by neuritis. Wakeling has failed to find any organism in the blood. Newcomers are more affected by the bite of these insects, both immediately and more remotely, than old residents.

10. **Treatment of Whooping-Cough.**—To combat the infective factor in whooping-cough Zangger has returned to the old quinin treatment advocated by Buiz in 1868. He uses quinin in the form of a 1 to 2 per cent. solution of quinin hydrochlorate in doses of 2½ fluid drams, administered at 8 a. m., 2 p. m., and 6 p. m., in severe cases, also at 11 a. m. The 1 per cent. solution can easily be administered, diluted with milk or water, to children under 1 year of age. To influence the neurotic element of the disease, Zangger gives simple hydropathic packs. The convulsive stage of whooping-cough is shortened to 10 to 20 days in medium and severe cases. The number of attacks in 24 hours rarely exceeds 20, and is rapidly reduced to 16, 12, 10, 8, etc. The intensity of the separate attacks diminishes at the same time, as does also the disposition to vomit. He continues the quinin treatment in half doses for several weeks after the cessation of the convulsive stages in order to avoid relapses and also as a general tonic. The patients were almost without exception then greatly improved in their general health. Of course, hygienic factors received all possible attention.

13. **Human Milk and Breast Feeding.**—The chief points elucidated by Elgood in her practical examinations are the following: The constituent of human milk most important to the healthy growth of the child is the fat. To maintain the healthy growth the percentage of fat content in the milk must be kept at a constant level and not be allowed to fluctuate. Therefore, in any given case the examinations must be made frequently to ensure that this constancy is present. To maintain both the necessary constancy of fat percentage, and a good quantity of milk in the breast, the nursing mother must be fed regularly. Lastly—a point of physiologic interest—the variations of fat are not dependent on increasing concentrations of the milk as lactation proceeds, but are actual variations in the secretion dependent on some accidental and temporary variation in the physical condition of the mother.

20. **Six Abnormalities.**—The abnormalities seen by Geddes were:

1. Clavicles with epiphyses at their acromial ends: Both of these had epiphyseal plates not only at their sternal but also at their acromial ends. The epiphyseal plate at the acromial end of the right clavicle was a right-angled triangular plate of bone, which was placed with its base superiorly and the right angle at the anterior end of the base. It was 9 mm. in anteroposterior length, 7 mm. in vertical height, and 15 mm. in thickness at its superior border. The corresponding epiphysis of the left clavicle was oval in shape. Its long axis measured 8 mm., its short 4 mm., and it was slightly over 1 mm. in thickness.

2. A case of third occipital condyle of unusual form: On the basi-occipital just to the left of the mesial plane there was a third occipital condyle. It was separated from the normal left condyle by a distinct interval of 3.5 mm. in breadth. Its transverse diameter was 7.5 mm., its anteroposterior not less than 6 mm. The inferior surface was smooth and articular. The structure that articulated with this condyle was a small pyramidal bone 9 mm. in height by 7 mm. broad. This little pyramid lay base up and apex down. To its apex was attached the suspensory ligament of the odontoid process (lig. apicis dentis). The presence of the small mass of bone had caused some slight distortion of the anterior arch of the atlas.

3. A case of bicipital rib of unusual form: All the ribs and cartilages on the left side were normal, as were the first to third and sixth to twelfth on the right side. The fourth right rib was normal in its cartilage and shaft, but from the neck midway between the tubercle and head a descending branch was given off at right angles. This descended vertically, and articulated with an abnormal bracket-like process, which projected forward from the neck of the fifth rib. Through the foramen enclosed by the abnormal process and the body of the fourth dorsal vertebra both rami communicantes, a small branch of the intercostal artery, and some veins passed.

4. A case of os tibiale from the right tarsus.

5. The position of the bronchus of supply to Wrisberg's lobe: This lay immediately subjacent to the pleura forming the floor of the groove for the vena azygos major, to which level it descended about ¼ inch from its point of origin as an internal branch of the bronchus of supply to the apex of the lung.

6. The significance of the vasa aberrantia superior and inferior: The superior vas aberrans arose, as usual, from the right superior intercostal, the inferior from the aorta by a short stem common to it and the intercostal artery of the third left intercostal space.

Lancet, London

Oct. 15

28 *Education of the Medical Student. F. H. Marsh.
29 Industrial Tuberculosis. T. D. Lister.
30 Mineral Waters as Artificial Serums. C. Fleig.
31 *Ulcerating Granuloma of the Pudenda a Protozoal Disease. R. M. Carter.
32 *Tumor of the Hypophysis Cerebri. W. Boyd.
33 Carcinoma of the Cecum Removed After a Preliminary Evacuation of a Fecal Abscess and an Ileosigmoidostomy. J. D. Malcolm
34 Treatment of a Uterine Fibroid by Roentgen Rays. A. F. Savill.
35 Uremia with Facial Paralysis and Intestinal Ulceration. G. Parker.

28. **Education of the Medical Student.**—Marsh advocates the appointment of a ward tutor. This appointment has already been made in some British hospitals. The ward tutor is a junior teacher. He has a class limited to ten. These he instructs in a suitable number of cases, in note-taking, surgical anatomy, symptoms, methods of examination, special appliances, and so forth. His aim is to be thorough, and to work out the case he selects with deliberation and completeness. Such work as this would not only interest but educate a man, while there can be no doubt it would be valued highly by every intelligent student. The work of the tutor when properly and loyally performed would not interfere with cases in which the visiting surgeon was interested, or with his authority. Such cases as he desired would be left entirely alone. The tutor would take only cases in which the surgeon, for teaching purposes, did not concern himself; nor would this be any drawback, for the simplest cases, after all, are the most suitable for the instruction of beginners.

31. **Ulcerating Granuloma of the Pudenda.**—Ulcerating granuloma of the pudenda, Carter claims, is not a venereal disease, though, as a rule, the genitals and contiguous parts are the seat of infection. It is contagious and is auto-inoculated by the host on other parts of the body. The disease has been seen on the surface of the cheek, the buttock, etc. It is usually seen in adults, and race plays no essential part in its etiology. The distribution of the disease is extensive: British Guiana, the South Pacific Islands, Northern Australia and New Guinea have given typical examples. It occurs in India perhaps more frequently than in other countries. According to former histologic researches this disease has up to date always been classified among the infectious granulomatous tumors. However, if sections are stained as described by Carter, he says it will be found that the disease is due to a protozoal infection.

Thin sections fixed to a slide are stained in a solution of Giemsa stain diluted 12 drops to 10 c.c. of distilled water. After this stain has acted for 20 minutes each section is washed in tap water for about 30 seconds, then dipped in eosin solution, 1 in 50,000, for 45 seconds, dehydrated, and brought up through xylol into Canada balsam. The second method is to stain a fixed section with a saturated solution of eosin in alcohol (95 per cent.) for 5 minutes; the solution must be 3 months old. The stained section is then washed in distilled water, and counter-stained with watery methylene blue, 1 to 1,000, until the nuclei are stained deep blue. The slide is then washed in absolute alcohol for a few seconds and taken up through xylol into Canada balsam. The first thing that strikes the eye will be that in certain areas lie masses of very large mononuclear cells, their cytoplasm distended with from fifteen to fifty bean-shaped bodies resembling the gregariniform stage of a herpetomonas or crithidium. On using the higher powers of the microscope these bean-shaped parasites are seen to contain the usual cytologic elements. The parasite, though slightly smaller than that seen in sections of Oriental sore, is very similar. Carter considers that the parasite of ulcerating granuloma is of the same class, and will be found similarly to develop monadine and gregariniform phases in suitable culture media. For the present he proposes, therefore, to consider ulcerating granuloma of the pudenda as due to a localized protozoal infection of man with either a herpetomonas or crithidium.

32. **Tumor of the Hypophysis Cerebri.**—The chief points of interest in Boyd's case were: (1) the long duration (8 years); (2) absence of wasting and of any symptoms of acromegaly; (3) the sudden termination; (4) the nasal discharge of cerebrospinal fluid; (5) the enormous amount of albumin and extraordinary lymphocytosis in the fluid from a case of non-syphilitic tumor; and (6) the remarkable destruction to the floor of the skull. The sella turcica had developed into a huge cavern 6.5 cm. long and 4 cm. wide. Opening out of it on either side was an oval aperature, than on the left side on investigation proving to communicate with the antrum

of Highmore of that side. Thus the discharge from the left nostril, observed during life, was in reality an escape of cerebrospinal fluid from the cranial cavity. The fossa had no bony floor, but merely a membranous partition separating it from the cavity of the pharynx. Microscopic examination of the tumor showed it to consist chiefly of large round and oval cells containing a large and distinct nucleus; there were numerous large thin-walled blood spaces, and here and there fibrous trabeculæ running through the tissue; the whole bore a close resemblance to a mixed-celled sarcoma.

British Journal of Children's Diseases, London

October

36 *At What Age Should the Education of the Deaf Child Commence? M. Yearsley.
37 *Idiopathic Acidosis in Children. J. G. Sharp.
38 Treatment of Congenital Syphilis with Ehrlich's "606." J. E. R. McDonagh.
39 Third International Congress on School Hygiene. M. D. Eder.

36. **Education of the Deaf Child.**—Briefly, Yearsley holds that the oral education of the deaf child should commence at the age of 3 years.

37. **Idiopathic Acidosis in Children.**—Three types of cases are cited by Sharp:

Mild case: A boy, aged 6, is somewhat suddenly seized with sickness and vomiting of small quantities of white-of-egg-like substance, thirst, slight headache, and drowsiness. The bowels are not unduly constipated. Very little urine is passed. There is the characteristic sweet odor of the breath. The urine is acid, contains neither albumin nor sugar, but gives the reaction for acetone. He has no desire for food, but craves for cold water and soda-water. These are given freely, and a magnesium and sodium carbonate mixture is prescribed. In 24 hours he is better, vomiting is less frequent, and the drowsiness is not so pronounced. In 48 hours after being first seen he is on the way toward convalescence.

Severe case: Girl, aged 4½. When she was 2, or a little over, she had her first attack, and from that time until now she has had something like four seizures, or rather less than two on the average yearly. All have been severe. In one attack she was semicomatose for 56 hours, only waking up at intervals to ask for a drink. At the end of one of these attacks, lasting, perhaps, only 3 days, the child was left with soft, flabby, wasted muscles, far in excess of that usually experienced in an illness of such short duration. From the age of 12 months she had suffered from severe urticaria without abdominal pain, but in none of the attacks of acidosis was there accompanying urticaria.

Fatal case: Girl, aged 7, who had previously been in good health. There was no tendency to any complaint. Child was vomiting everything ingested and had a sweet odor of the breath. The temperature was 99 F. in the axilla. The tongue was not particularly coated. There was some slight tenderness high up in the abdomen on pressure, but no muscular resistance. No swelling nor peristalsis suggestive of pus or obstruction was to be found. The mother said that the patient wished to lie quiet and not be bothered with anything. The urine contained acetone. Sharp ordered a simple mixture containing magnesium carbonate, sodium bicarbonate, and salines, and plenty of cold water freshly drawn. The patient died.

Australasian Medical Gazette, Sydney

September 20

40 Peritonitis and Its Treatment. W. Trethowan.
41 Dystocia Caused by Polycystic Disease of the Fetal Kidneys. R. Worrall.
42 Missed Labor, with Central Placenta Prævia. J. C. Windeyer.
43 *Medical Treatment of Exophthalmic Goiter. S. Gillies.
44 *Pathology and Surgical Treatment of Exophthalmic Goiter. W. J. S. McKay.
45 Exophthalmic Goiter. J. Flynn.
46 Ulcerative Endocarditis. H. Mayo.
47 Two Cases of Malignant Endocarditis. J. E. McGlashen.
48 A Case of Malignant Endocarditis. R. Magarey.
49 Id. P. Bollen.

43. **Medical Treatment of Exophthalmic Goiter.**—Gillies summarizes his views as follows:

1. The thyroid is an organ whose secretion is essential to life. Too free removal results in myxedema.
2. In the majority of slight and early cases of exophthalmic goiter the patients recover if treated promptly and rigidly. Cases with apparently acute onset are generally simply exacerbations of unrecognized mild cases.
3. The essentials of treatment are absolute rest and regulated diet.
4. Hydrotherapy and electricity are of use as adjuvants; so, too, are certain drugs.
5. While animal extracts and serums have so far been of doubtful value, they are worthy of further trial.
6. No case should be submitted to operation till it has had rigid medical treatment for at least 3 months.
7. Patients who show no signs of improvement after 3 months strict treatment should be offered operation. If improvement is occurring, wait.
8. Complete recovery cannot be expected in advanced cases, with badly damaged hearts, by either medical or surgical means.
9. Advance is to be sought along the line of discovery, and elimination of the cause of hypersecretion rather than by the ablation of part of an essential gland.

44. **Surgical Treatment of Exophthalmic Goiter.**—McKay is convinced that no case of this disease should ever be operated on until the patient has rested in bed, and has undergone a preliminary treatment extending over 2 weeks or more. During this period, the patient is allowed plenty of milk, butter, rice, meat, eggs and fish; but should not be given salt, except in small quantities, and all fluids, except milk, should be much reduced. McKay always gives his patient atropin (gr. 1-100) twice a day. The patient is not informed until the day before when she is to be operated on, and she should be given a hypodermic of morphin so as to insure sleep, and also an hour before the operation she should have another injection (gr. 1/8). He prefers general anesthesia using the drop method of open ether. McKay believes that the removal of half the gland in the mild cases, the tying of the opposite superior thyroid only in the more severe cases, and the removal of half of the other side of the gland in the most severe cases, in addition to the complete removal of one side of the gland, insures practically a cure in 75 per cent. of all cases. The patients who do not do well are those whose hearts have been ruined by the prolonged use of drugs. McKay has had three deaths in forty operations. The first patient died some 12 years ago, 3 days after the operation, from hyperthyroidism. The second patient died 2 years ago on the fourth day after the administration of 10 m. of adrenalin chlorid. The third patient died on the day of the operation from exhaustion.

Clinical Journal, London

October 12

50 Ocular Pain. P. Dunn.
51 Malignant Disease of the Testis. R. Howard.
52 Notes from a Foreign Spa. J. H. Barnard.

Medical Press and Circular, London

October 12

53 Eclampsia and the Principles of Treatment. H. O. Nicholson.
54 Acute Non-Suppurative Encephalitis in Children. N. P. Marsh.
55 *Senile Epilepsy. H. R. Hurter.

55. **Senile Epilepsy.**—Hurter draws attention to the association of periodic fits with the vascular changes and rising blood-pressure of later life, and connects gout with the etiology of senile epilepsy in men. He says that in so-called cardiovascular epilepsy, temporary cessation of the major circulation produces the fits, and that (conversely) in some cases of idiopathic epilepsy the fits are ushered in by a transient ebb in the general circulation. Some few people who have for years suffered from faints, begin to have their faints replaced by fits. It is interesting, he continues, in connection with the question of the relationship of syncope and epilepsy, to notice how frequent the fainting and other minor manifestations of vasomotor instability in the non-epileptic members of an epileptic family. This "vasomotor ataxia" is well illustrated in a family in which the second girl is a pronounced epileptic. Another girl, the eldest, has for many years suffered from so-called renal epistaxis, while the third sister is troubled with morbid blushing and frequent epistaxis. In Hurter's cases of epilepsy commencing in septuagenarians, gout and arterial degeneration, with the rise of blood-pressure of later life, seem to be important etiologic factors. He believes that gout may, of course, cause uremic convulsions, but indirectly through gouty renal disease. Similarly, he believes that gout may cause senile epilepsy through gouty arterial disease. The histories of two of his cases show that the fits dated from or from shortly after the first attack of acute gout.

Annales de Gynécologie et d'Obstétrique, Paris

September, XXXVII, No. 9, pp. 513-575

56 Placenta Marginata. (Placenta Marginé.) C. Funck.
57 Origin of the Lutein Cells of the Corpus Luteum in the Cow. M. Delestre.
58 Pathologic Anatomy of Vaginal Cystocele. H. Violet and P. Bonnet.

Annales de l'Institut Pasteur, Paris

August, XXIV, No. 8, pp. 609-672

59 Research on Anaphylaxis and Immunity. (Nouvelle expériences sur la crépitine et l'actino-congestine.) C. Richet.
60 Temperature Fatal to Plant Tyrosinase. G. Bertrand and Rosenblatt.
61 Transmission of Trypanosomes by the Glossian Species. G. Bouet and E. Roubaud.
62 Influence of Reaction of Media on Diastasic Oxidation of Melanin. H. Alguihon.

Annales des Maladies des Org. Génito-urinaires, Paris

September 1, XXVIII, No. 17, pp. 1537-1632

63 Mode of Propagation of Tuberculosis of the Fallopian Tubes and Rectum to the Bladder. F. Cuturi.
64 Electrolysis in Treatment of Urethral Stricture. (L'ionisation dans les affections des voies urinaires.) D. Courtade.
65 *Inflammatory Stricture of the Prostatic Urethra. L. V. Girolamo.

September 15, No. 18, pp. 1633-1728

66 Catheterization of the Urethra and Intravesical Segregation of Urine. J. Heitz-Boyer, G. Luys and G. Marion.
67 Douche Massage of the Urethra. E. Jeanbrau.

65. **Inflammatory Stricture of the Prostatic Urethra.**—Girolamo states that the tissues here are so hard to dilate that treatment can be only by circular electrolysis. He has been uniformly successful with this method, as he describes in detail. The anterior urethra may have to be dilated as a preliminary to exploration of the stricture proper.

Archives des Maladies du Cœur, Etc., Paris

October, III, No. 10, pp. 577-640

68 Pernicious Anemia in Girl of 11. L. Babonneix and G. Paisseau.
69 Mechanical Conditions in Development of Sclerosis and Atheroma of the Pulmonary Artery. L. Giroux.
70 *The Ultimate Outcome in Fifty-One Cases of Exophthalmic Goiter. (Sur la marche de la maladie de Basedow.) L. Syllaba.

70. **The Ultimate Outcome of Exophthalmic Goiter.**—Syllaba has traced to date the history of 51 patients with exophthalmic goiter, 1895-1907, all but one of whom were treated by medical measures. In 5 of the 17 patients who may be regarded as entirely cured, the affection commenced with a stormy onset. After a few weeks the gastrointestinal and psychic disturbances improved but the exophthalmic syndrome persisted unmodified for from several months to a year and then subsided entirely, with no recurrence to date from 3 to 12 years since. In another group of patients the exophthalmic goiter symptoms did not disappear completely but became much modified, the weight increased, the patients felt well and resumed their usual occupations, and have continued in this condition for from 3 to 15 years to the present time. Recurrence of severe exophthalmic goiter was observed in 5 patients last year, proving fatal in 1, and 7 others are developing a tendency to recurrence, while others have persisted in a condition of chronic illness. The recurrences developed after an interval of 3, 6 and 7 years, and have been known even after 6 or 9 years. In 3 of the total 51 cases he noticed an aggravation of symptoms and of the course of the disease under internal iodid medication. In 11 cases the disease progressed to a fatal termination; in 3 others the patients succumbed to arteriosclerosis, progressive paralysis or typhoid. In the chronic fatal cases the disease continued a progressive course for a period up to 10 years, but in the subacute cases with a duration of from 6 to 24 months, there were profound cachexia and irritability of the nervous system, sometimes amounting to loss of mental balance, and some patients presented vomiting and diarrhea and notable weakness of the heart. Removal of the thyroid in one case after 15 months of the disease did not ward off the fatal termination; it was preceded by tetany and recurrent paralysis. The symptoms indicate intense intoxication in the subacute cases; in the chronic cases the intoxication is less intense but it seems to affect particularly the heart and kidneys. Patients with exophthalmic goiter which does not promptly show a turn for the better, must be instructed to regulate their lives to spare the heart and kidneys as much as possible; special attention should be paid to these organs in case of intercurrent disease. The experiences related confirm further the importance of watching over the nervous system and maintaining the psychic balance during convalescence and afterward to prevent recurrence. The iodids should be prescribed very cautiously.

Archives de Médecine des Enfants, Paris

October, XIII, No. 10, pp. 721-800

71 *Infantile Scorbutus. J. Comby.
72 Symmetrical Nodular Osteoperiostitis of the Bones of the Skull in Tuberculous Infants. H. Triboulet and L. Ribadeau-Dumas.
73 *Tuberculin Treatment of Children. F. X. Gouraud.
74 Exercises and Apparatus in Treatment of Scoliosis. C. Roederer.

71. **Infantile Scorbutus.**—Comby has encountered only 15 cases of scorbutus in a dozen years of pediatric practice at Paris; the disease is comparatively rare in France.

73. **Tuberculin Treatment of Children.**—Gouraud concludes from his experience that tuberculin may render great service in treatment of tuberculous children but that the best results may be anticipated in the scrofulous, the children with enlarged glands, in those with inherited taint, and in those with tuberculosis of the bones or glands. He declares that tuberculin should be absolutely rejected when there is any involvement of the lung. The technic should be about the same as for adults except that the doses may be increased more rapidly; frequent intermissions are of advantage. The benefit is most apparent in the weight and general development; the local processes show the benefit more slowly.

Lyon Médical, Lyons

September 18, XLII, No. 38, pp. 441-480

75 Patient with Severe Exophthalmic Goiter Cured by Serum of Thyroidectomized Sheep. Devic and C. Gardère. Commenced in No. 37.

October 2, No. 40, pp. 537-584

76 Value of Operative Treatment of Exophthalmic Goiter. A. Poncet.
77 The Koplik Spots in Measles. (Les taches jugo-labiales dans la rougeole.) M. Péhu and C. Rey. Commenced in No. 39.

Obstétrique, Paris

September, III, N. S., No. 9, pp. 721-768

78 Radium Treatment of Inoperable Cancer of the Cervix Uteri and Vagina. H. Chéron and H. Rubens-Duval.
79 Artificial Feeding of Infants Without Milk. (De l'alimentation non lactée chez le nourrisson.) E. Terrien.

Presse Médicale, Paris

October 12, XVIII, No. 82, pp. 761-768

80 Case of Tuberculous Anemia and Hemolytic Jaundice. L. Landouzy.
81 Radiotherapy of Venereal Vegetations. M. Chicotot.

Revue de Gynécologie, Paris

September, XV, No. 3, pp. 193-303

82 Two Cases of Axial Torsion of the Fibromatous Uterus. Vautrin.
83 Contusion and Traumatic Ruptures of the Duodenum. M. Guibé.
84 Stone in the Ureter. (Deux cas de calculs de la portion lombo-iliaque de l'uretère.) R. Proust and Infroit.

Revue de Médecine, Paris

September, XXX, No. 9, pp. 697-784

85 *Treatment of Sciatica and Senile Hip-Joint Disease. K. Petrén.
86 The Nervous System in Children with an Inherited Morbid Nervous Taint. G. G. Catola.
87 The Serodiagnosis of Tuberculosis and the Etiology of Mental Disease. A. Marie and P. Beaussart.
88 Inherited Syphilis and the Wassermann Reaction. H. Bertin and Gayet.
89 Pathologic Sleep. (L'hypersomnie.) A. Salmon.

85. **Treatment of Sciatica and Senile Hip-Joint Disease.**—Petren states that he has cured 37 patients out of 50 with sciatica in the last 5 years and the 13 others were materially improved. He denies the existence of chronic sciatica, although a chronic affection in the sciatic may develop secondarily. In many of the cases diagnosed as sciatica, the trouble is really senile hip-joint disease. The mistake is due in part to the frequent complication of the latter with sciatica. He treats sciatica by bed rest and heat, the salicylates internally and externally, and massage later. Massage is useful in acute and subacute cases but in very severe cases it may be well to wait for the influence of drugs before commencing. He has recently observed cases in which there was no painful point

along the sciatic nerve; the trouble is a myositis of the gluteus medius and pyramidalis, with compression of the nerve. Massage in this case may be restricted to the muscles involved. He makes it a principle to stretch the nerve in every case of sciatica. The patient lies on the back with the knee extended and the leg is raised until a slight pain is induced. This stretches the nerve, but Petren never carries the stretching far enough to induce much pain, stopping always with the slight painfulness. This stretching procedure is repeated every day at the time the massage is done. If the sciatica is very severe he does not stretch the nerve in this way until after massage has been applied for a few days. But the nerve can be stretched farther and farther each day without pain, and the other symptoms improve at the same time. Petren never applies revulsion as the results have been satisfactory without. The average duration of treatment in the cured cases was about a month. The same therapeutic principles, he says, give good results in senile hip-joint disease, and he cites cases from his practice to prove it. This affection should be suspected when the patient has suffered for some time from pains in the hip or leg even if the hip joint is fairly movable. The joint normally can be flexed to 130 degrees and this may still be possible when the hip affection has lasted for several years. Frequently the pain is more intense as the patient starts to walk and it improves afterward, the reverse of what is observed with sciatica, and certain movements alone are painful while every movement is liable to be painful with sciatica. The course is progressive but great improvement may be realized by passive exercise of the joint, the movements continued to distinct but transient pain; the aim should be to exercise as vigorously as can be done without causing persistent pain after the sitting. The joint should be flexed, rotated inward and outward, abducted and adducted in turn, avoiding only circumduction, that is, making the femur describe a cone. The aim with the exercises is to increase the movability of the joint; this improves the gait and reduces the painfulness.

Semaine Médicale, Paris

October 12, XXX, No. 41, pp. 481-492

90 *Tongue Pulse with Aortic Insufficiency. (Le pouls de la langue.) L. Minervini.

90. **The Tongue Pulse with Aortic Insufficiency.**—Minervini has never noted pulsation in the tongue with any form of valvular disease except aortic insufficiency but he has encountered it frequently with the latter. The patient sits with his head a little thrown back, the mouth open and the tongue resting on the floor of the mouth can be seen to jerk upward rhythmically and synchronously with the heart beat. The vigorous impulse from the heart in case of aortic defect sends an unusually strong wave into the lingual artery; it is powerful enough in some cases to lift at each beat a tongue depressor laid lightly on the tongue to arrest involuntary trembling or fibrillary movements. No other morbid condition seems to be able to produce this tongue pulse as none affects the peripheral circulation to such an extent as aortic insufficiency. At no other point, he says, is the effect so marked and unmistakable and so easily controlled as in the tongue. The intensity of the tongue pulse varies with changes in the arterial pressure. It is most pronounced naturally with considerable hypertrophy of the left ventricle, and it diminishes as the excessive sensibility of the vessels becomes reduced under the influence of heart tonics and diuretics.

Archiv für Kinderheilkunde, Stuttgart

LIV, Nos. 1-3, pp. 1-240. Last indexed Sept. 3, p. 893

91 Experimental Research on Tetany in Children. V. Pexa.
92 Earthy Alkalies in Blood of Dyspeptic Infants. (Erdalkaligehalt des Säuglingsblutes bei Ernährungsstörungen.) F. Proskauer.
93 Influence of Physiologic Salt Solution in Raising the Temperature and Inducing Edema. (Pyrogene und hydropigene Eigenschaften der physiologischen Salzlösung: Bedeutung und Behandlung der Exsiccation.) P. Heim and K. John.
94 Lime in Pathology of Rachitis. (Phosphorstoffwechsel bei Rachitis. IV.) J. A. Schabad.
95 *Contagiousness of Scarlet Fever. F. v. Szontagh.
96 Sepsis after Varicella. O. Retzlaff.
97 Advantages of Institutional Care for Infants. (Erfolge der Anstaltspflege von gesunden und kranken Säuglingen.) T. Hoffa.

95. **Contagiousness of Scarlet Fever.**—It has been Szontagh's experience at Budapest that suppurative sore throat occurs in epidemic form much more commonly than the text-books recognize, and also that epidemics of suppurative tonsillitis frequently coincide with scarlet fever epidemics. The features of various epidemics of the latter have convinced him that the same germ or associated germs are responsible for both the angina and scarlet fever. Trousseau used to call tonsillitis "*scarlatine fruste*," and Szontagh exclaims that we have not made any progress in our knowledge of scarlet fever since his day. Szontagh is inclined to believe that the causal agents of scarlet fever are with us at all times and that infection from them depends on the predisposition. The conditions with scarlet fever are much like those with puerperal fever, he states, and the outlook for prophylaxis is not very encouraging. Scarlet fever may develop at isolated points without known contagion, but yet the number of cases may be large in the aggregate, while puerperal fever is comparatively rare, but the analogous features of these infections render it improbable, he states, that this great danger that threatens children will ever be materially reduced by external means, much less entirely eradicated. The predisposition on the part of the organism and the enhancing of the virulence of the germs under certain special conditions are the decisive factors in scarlet fever infection.

Archiv für Verdauungs-Krankheiten, Berlin

October, XVI, No. 5, pp. 627-626

98 Double Carcinoma of the Gall-Bladder. E. Buchmann.
99 Dilatation of the Stomach and Chronic Benign Ischochymia. M. Einhorn.
100 Interpretation of Roentgen-Ray Gastric Findings. (Einige Streitfragen aus der Röntgenologie des Magens.) F. M. Groedel and B. Stiller.
101 Membranous Enteritis. E. v. Czyhlarz.
102 *Gastric Hyperacidity and Ulcer Diets. (Ulcuskuren und Diät bei Hyperaciditas ventriculi.) A. Schüle.

102. **Diet in Gastric Ulcer.**—Schüle discusses the special features of the Leube and Lenhartz methods of dieting for gastric ulcer, and describes various comparative tests. He found for example that 100 gm. of milk, of boiled rice, raw meat, casein or zwieback required respectively 125, 125, 440, 800 and 145 c.c. of one-tenth normal hydrochloric acid to render the Congo paper reaction negative, that is, to saturate all the affinities. This shows that the Leube diet requires no less and even a little more hydrochloric acid for its digestion than the Lenhartz diet. Lenhartz aimed to bind the free hydrochloric acid, but this is accomplished just as well or even better by the milk diet than by the meat-egg Lenhartz diet. The latter makes more demands on the secretory function so that the Leube diet spares the stomach better. Of the 40 patients weighed repeatedly during a Leube course of dieting for gastric ulcer only 12 lost weight and these lost only from 2 to 5 pounds, with a single exception; 7 patients regained their former weight, and 20 others increased in weight from nearly 5 to 10 pounds, demonstrating that the Leube diet cannot be regarded as insufficient nourishment.

Berliner klinische Wochenschrift

October 3, XLVII, No. 40, pp. 1813-1860

103 Pupil Disturbances in Dementia Præcox. E. Meyer.
104 *Nervous Anorexia and Other Disturbances in Young Children and Nervous Inability to Chew. (Ernährungsneurosen im frühen Kindesalter und nervöse Kauunfähigkeit der Kinder.) K. Hochsinger.
105 Importance of the v. Pirquet Tuberculin Reaction for Diagnosis and Prognosis of Tuberculosis in Infants. L. Cohn.
106 The Rise in Temperature in Syphilis after Mercurial Injection Not a Sign of Active Syphilis. G. Stümpke.
107 Injections of Metallic Mercury. P. Fürbringer.
108 Vaccine Treatment of Gonorrhea. (Neuere Methoden der Gonorrhoebehandlung.) C. Schindler.
109 Route of Tuberculous Infection of the Lungs: Its Clinical and Therapeutic Importance. E. Aufrecht. Commenced in No. 39.
110 Sensitiveness of the Organism to Its Own Albuminoids. (Die Empfindlichkeit des Organismus gegen die körpereigenen Eiweisskörper: Homästhesie.) J. Sellei.
111 Action of Atoxyl on the Eye. K. Steindorff.
112 The Preliminary History of Ehrlich's "606." K. Alt and P. Ehrlich.

104. **Neuroses in Children in Connection with Eating.**—Hochsinger had opportunity to observe the development of the neurosis from the beginning in five cases. The mothers were

all hysterics and the environment was neuropathic. The children developed well during the first few months but were constantly overfed, the mother or nurse or both constantly urging the infant to eat, with the natural dyspeptic and dystrophic consequences and loss of appetite. The overfeeding resulted in actual distaste for all food. The nervous anorexia is particularly liable to develop when the child is weaned, a fixed psychic trauma being the consequence of the ill-judged methods of feeding. This psychic trauma is liable to leave traces for many years—persisting anorexia with a tendency to vomit readily and inability to chew solid food. The only help in such a condition, Hochsinger asserts, is to remove the child for a time from the home environment and allow food only when he is actually hungry. In one such case a boy of 7 vomited at every meal during the first week after a change of environment, although no one paid any attention to this habit and no one coaxed him to eat. He found it almost impossible to chew his food, having been fed constantly with soft foods hitherto, and he did not learn to chew properly for 2 months. He is still a nervous dystrophic child, lazy about chewing and a poor eater. The main point emphasized is the necessity for preventing the development of these neuroses. With the children of neuropathic parents special stress must be laid on the necessity of proper intervals between feedings. Above all, when the child is weaned, food should not be forced on him until he is hungry. Nervous dyspeptic children in neuropathic families sometimes owe much of their abnormal condition to a psychic trauma in infancy that might easily have been avoided.

Deutsches Archiv für klinische Medizin, Leipsic

C, Nos. 3-4, pp. 221-428. Last indexed October 8, p. 1329

113 Studies of the Pulse. E. Edens.
114 Behavior of the Chromaffin Tissue of the Suprarenals under the Influence of Experimental and Natural Diphtheria Infection. B. Hannes.
115 The Mode of Action of Kidney and Heart Tonics on Diseased Kidneys. (Wirkungsweise von Nieren- und Herzmitteln.) M. Hedinger.
116 Influence of Higher Temperatures on Concentration of the Blood. I. Sandelowsky.
117 The Liver with Necrosis of the Pancreas. (Auftreten akuter schwerster Leberdegenerationen an Tieren mit Eck'scher Fistel bei komplizierender Pankreasfettgewebsnekrose. Beziehungen zwischen Leber und Pankreas.) F. Fischler.
118 Duration of Contraction of the Heart. (Anspannungszeit des Herzens.) G. C. Robinson and G. Draper.
119 Levulose and Elimination of Urobilin in Functional Testing of the Liver, in Infectious Diseases. W. Schmidt.
120 Synthetic Suprarenin in Internal Medicine. J. Kauert.
121 The Blood-Pressure-Raising Substance of the Kidney. (Weitere Untersuchungen über die blutdrucksteigernde Substanz der Niere.) A. Bingel and R. Claus.
122 Determination of Iron Content of the Blood. (Zur Methodik der Eisenbestimmung im Blute.) A. Jolles.

Deutsche medizinische Wochenschrift, Berlin

October 6, XXXVI, No. 40, pp. 1833-1888

123 A Century of the Berlin Medical Faculty. J. Pagel.
124 Achievements in the Science of Anatomy at the University of Berlin During its Century of Existence. W. Waldeyer.
125 The Medical Share in the Foundation of the Berlin University. J. Schwalbe.
126 What German Medicine Has Contributed to the Progress of Civilization During the Nineteenth Century. (Was hat die deutsche Heilkunde im 19. Jahrhundert zum allgemeinen Kulturfortschritt beigetragen?) W. A. Freund.
127 The Limitations of the Natural Sciences. (Grenzen der Naturwissenschaft.) E. Haeckel.
128 Disease. (Krankheit.) H. Ribbert.
129 The Influence on Modern Medicine of the Conception of Specific Action. A. Wassermann.
130 Disturbances in Development. (Entwicklungsstörungen.) A. Hegar.
131 Difficulties in the Diagnosis of Progressive Muscular Dystrophy. (Klinische Kasuistik aus der Praxis. III.) W. Erb.
132 *Nasal Reflex Neuroses. G. Killian.
133 The Celebration of the Fiftieth Anniversary of the University of Berlin in 1860. G. Mamlock.

132. **Nasal Reflex Neuroses.**—Killian states that nasal reflex neuroses are becoming more and more frequent in city dwellers and that the whole subject needs revision as treatment is successful only when applied strictly according to indications in the individual cases. These indications are determined by the sensitiveness of the nasal mucosa, and this he tests by the reaction to the contact of a piece of fine thread (No. 100), held in a slit cut in the end of a fine sound, so that the thread projects about 7 mm. from the tip of the sound. Drawing this thread along the forehead, cheek, outside or inside of the nose for about 3 mm. causes a tickling sensation. With normal sensibility tickling does not induce any reflex action but with an ultrasensitive mucosa the tickling is followed by sneezing, lacrimation, etc. Certain points in the nose are more sensitive than others, especially the processes on the septum and points in front just above the anterior end of the inferior turbinated bones. The reflex action occurs more easily, as the mucosa grows more sensitive under the prolonged influence of irritating dust, etc. By the thread test it is possible to localize the areas of ultrasensitive mucosa and put an end to the neurosis emanating therefrom by cauterizing the nerve terminals or slicing off the mucosa. It is important to determine the special nerve involved in the morbid area. E. Jonge has been successful in curing the anterior type of nasal neurosis by resecting the internal branch of the nasal nerve by way of the orbit, and Neumeier, Bloss and Killian himself have also performed successful operations of this kind. Zuckerkandl advocated this technic in treatment of neuralgia of this division of the fifth nerve. Killian has accomplished the same result by an intranasal operation, dividing the branch innervating the septum with a small right-angled lancet and the side branches above the anterior end of the inferior turbinated bone. The branch of the sphenopalatine in the septum can be severed with scissors above the upper margin of the posterior nares. The branches of the palatine nerve passing upward to the inferior turbinated bone can also be severed in the same way, but it is simpler and easier here to remove the mucosa. Pure olfactory nerve neuroses cannot be so readily treated as direct cauterization is out of the question. The first division of the fifth nerve sends branches to the lacrimal gland, the side of the eyelid and the conjunctiva, to the skin of the forehead and to the nose and all these regions participate in the reflex reaction to a tickling irritation in the ultrasensitive areas in the nasal mucosa. Tickling, local hyperemia and increased secretion occur not only in the nose but in the eye and possibly in the frontal sinus and there may be photophobia and frontal headache. The heart action may even be influenced. Sneezing is the most characteristic manifestation of this form of nasal neurosis while swelling of the turbinates and hypersecretion are more pronounced with the sphenopalatine neurosis. The latter may induce certain forms of neuralgia and headache and vasomotor pseudoerysipelatous redness and swelling of the cheek, the latter being due to radiation into the infraorbital domain. The sphenopalatine neuroses may also involve the respiration and heart action. He explains the mechanism in detail, calling attention to the special connection with attacks of coughing and asthma, in particular to the nasal form of asthma which may develop without much sneezing, rhinitis or hay fever. Rosenberg found that irritation of a point far back on the septum always brought on a severe attack of coughing in one asthmatic patient, and cauterization of this point cured the asthma. Hartmann also reported a similar case only that the ultrasensitive point in his case was at the posterior end of the inferior turbinated bone. Irritation of a point backward and high up on the septum slowed the heart beat and made it irregular in Koblanck's experiments on dogs, and clinical experience is confirming the existence of this special "heart point." The thread test enables the ultrasensitive areas of the nasal mucosa to be readily localized and points the way to effectual treatment of the special nerve responsible for the local regional and remote reflex phenomena which, untreated, are liable to develop into an actual chronic neurosis.

Fortschritte der Medizin, Leipsic

September 29, XXIX, No. 39, pp. 1217-1248.

134 Diagnosis of Anemia. G. Rheiner.
135 Hypertrophy of the Prostate. G. Axhausen. Commenced in No. 38.

Medizinische Klinik, Berlin

October 2, VI, No. 40, pp. 1559-1598

136 *Cherry-Stone Ileus. (Kirschkernileus.) H. Eichhorst.
137 Influence of Accelerated Heart Action on the Resisting Power of the Organ. (Einfluss beschleunigter Herztatigkeit auf die Resistenz des Herzens.) M. Heitler.
138 Biernacki's Ulnar Symptom. K. Singer.
139 *Round Gastric Ulcer at Innsbruck. R. Latzel.
140 *Diagnosis of Epidemic Meningitis in Young Children. E. Levy.

141 Influencing of the Symptoms of an Infant with Inherited Syphilis by Serum from Patients Treated with Ehrlich's "606." E. Meirowsky and Hartmann.
142 Technic of Administration of Ehrlich's "606" in Syphilis. K. Junkermann and E. Kromayer.
143 Progress in Aerology. A. Wegener.
144 The Medical Institutions of Berlin before the Founding of the University. P. Richter.

October 9, No. 41, pp. 1599-1642

145 Normal and Pathologic Shape of the Heart Valves. (Entstehung und Erhaltung der normalen und krankhaften Herzklappenformen.) R. Beneke.
146 Principles of Pathology and Treatment of Disturbances in Speech. (Sprachstörungen.) H. Stern.
147 Chronic Influenza. P. M. Walcha.
148 Ulceration after Injections of Ethereal Camphor Solution. (Seltene Art von Geschwüren nach Kampferätherinjektionen.) G. Frank.
149 Treatment of Fibrous Osteitis of the Tibia. A. Schanz.
150 *Chronic Dilatation of the Large Intestine in the Elderly. (Chronische Dilatation des Dickdarms im höheren Alter.) F. Erkes.
151 Question Blank Symposium on Ehrlich's "606." Commenced in No. 37.
152 Cell Inclusions in the Genital Secretions. H. Sowade.

136. **Cherry-Stone Ileus.**—Eichhorst recently operated on a woman of 47 with the presumptive diagnosis of cancerous obstruction of the ascending colon. When the bowel was opened, the lower part of the ileum and the entire ascending colon were found packed with cherry stones, 909 being removed. The intestinal mucosa was red but otherwise apparently unmodified. The patient succumbed the next day. She denied having been in the habit of swallowing cherry stones and her husband was not aware that she had eaten many. This is Eichhorst's second case of the kind. The patient in the other case was a man of 49 and the cherry stones were accumulated in the rectum; the outlet of the bladder had been compressed by the foreign bodies. There are only a few cases on record of ileus from obstruction by cherry stones without preceding stenosis, but Madelung has reported a case in which concrements developed around the stones.

139. **Gastric Ulcer at Innsbruck.**—Latzel comments on the comparative frequency of hypo-acidity and anacidity with gastric ulcer in his region. The food is mainly a vegetable diet and the ulcers seem to be connected with some mechanical injury of the mucosa and secondary infection with streptococci or staphylococci. Another feature of his cases was the normal or unusually high proportion of antipepsin in the blood serum.

140. **Diagnosis of Epidemic Meningitis.**—Levy emphasizes the importance of bacteriologic examination of the cerebrospinal fluid obtained by lumbar puncture. The naked-eye aspect is frequently misleading; the fluid may be turbid with tuberculous meningitis and only slightly turbid with the epidemic form or even quite limpid in chronic cases. In case of doubt an injection of antiserum is always advisable. After the hydrocephalus is once established, treatment is powerless. This confirms the importance of puncturing at once on suspicion of hydrocephalus. The meningococci may vanish early from the fluid. They may be found in the spinal fluid and be absent in the fluid in the ventricle, the communication between the different cavities being so often obstructed. In one case the cocci were destroyed in one lateral ventricle by injection of serum, although they persisted unmodified in the other.

150. **Chronic Dilatation of the Large Intestine in the Elderly.**—Erkes reports a case of chronic dilatation of the large intestine in a man of 71. It had apparently caused no disturbances except for a tendency to constipation and protruding abdomen until after lifting a heavy weight violent pain suddenly developed in the abdomen with signs of obstruction. A similar attack a year before had subsided under a purge and rest in bed, but this time the patient suddenly collapsed and died. Necropsy revealed the entire large intestine enormously distended. Versé has recently reported two similar cases in men of 65 and 72; the left lobe of the liver in the latter case had atrophied from the effect of pressure from the dilated colon.

Münchener medizinische Wochenschrift

October 4, LVII, No. 40, pp. 2073-2120

153 Roentgen-Ray Diagnosis of Callous Gastric Ulcer. M. Faulhaber.
154 *The Parathyroids and Sudden Death in Children. (Mors subita infantum und Epithelkörperchen.) P. Grosser and R. Betke.
155 Elimination of Arsenic after Taking Ehrlich's "606." (Beginn und Dauer der Arsenausscheidung im Urin nach Anwendung des Ehrlich-Hataschen Präparates Dioxydiamidoarsenobenzol.) K. Greven.
156 Ehrlich's "606" in 156 Cases of Syphilis. Favento.
157 Deafmutism. (Zur Aetiologie der Taubstummheit.) K. Beck.
158 Progressive Pernicious Anemia. M. Gioseffi.
159 Influence on Toxic Action of Chloroform of Fat Circulating in the Blood. L. Lattes.
160 Commercial Diabetic Foods. (Untersuchung einiger Diabetikergebäcke des Handels.) N. Janney.
161 Application of Cystoscopy for Examination of Serous Cavities in General. H. C. Jacobaeus.
162 Therapeutic Lavage of Kidney Pelvis. (Zur Behandlung der Kolipyelitis mit Nierenbeckenspülungen.) H. Hohlweg.
163 Non-Operative Treatment of Phimosis under the Age of Three. F. Hamburger.

154. **The Parathyroids in Connection with Sudden Death.**—Grosser and Betke state that when no other explanation for the sudden death of a child can be discovered, the parathyroids should be examined with the microscope. It may be possible to discover in them traces of a destructive process involving the larger part of their substance and this alone is sufficient to account for the fatality, as he shows by reports of three cases and a case previously reported by Yanase. The children were only 2 or 3 months old and death occurred suddenly in apparent health except for a mild bronchitis in one case. Aside from the destructive process in the parathyroids, the necropsy findings were normal.

Zeitschrift für Geburtshülfe und Gynäkologie, Stuttgart

LXVII, No. 1, pp. 1-265. Last indexed Sept. 17, p. 1063

164 Cesarean Section Versus Pubiotomy. (Kaiserschnitt oder Beckenspaltung.) O. Pankow.
165 *Three Rare Genital Tumors. (Drei seltene Geschwülste.) A. Sitzenfrey.
166 Primary Adenocarcinoma of the Vagina. O. Hoehne.
167 Operative Treatment of Benign and Malignant Ovarian Tumors. (Eierstocksgeschwülste.) A. Vanvolxem.
168 Toxicology of the Placenta. Guggisberg.
169 Importance of Determination of Antitrypsin in Gynecology. A. von der Heide and E. Krosing.
170 *Eclampsia. V. Albeck.

165. **Uncommon Gynecologic Tumors.**—The first of the three cases reported by Sitzenfrey was an intramural lipomyosarcoma of the anterior wall of the uterus; the second was an adenoma of the right ovarian ligament, and the third was an epidermoid proliferating from the pelvic connective tissue in front of the cervix. They were all successfully removed.

170. **Eclampsia.**—Albeck states that at the Copenhagen maternity in charge of L. Meyer it was found that the prognosis both for mother and child was graver the longer the interval between the first convulsion and the expulsion or extraction of the fetus. About 14 per cent. of the women and 16 per cent. of the children died in the twenty-eight cases in which delivery followed at once after the first attack; the mortality increased to over 16 per cent. for the mothers and 44 per cent. for the children in the fifty-four cases in which from 3 to 10 attacks had occurred before delivery. Over 44 per cent. of the mothers and 68 per cent. of the children succumbed in twenty-nine cases in which delivery was late. He comments that the mortality is considerable even when the women are delivered early. His experience further shows that severe cases of eclampsia can develop without convulsions and that several attacks of convulsions may occur in the milder cases and that they may be absent in the more serious. The question now is to learn to distinguish the inherently mild cases so that expectant treatment may be justified in them. In the six fatal cases in which delivery followed at once after the first one or two attacks of convulsions, all the patients had long presented prodromal symptoms before convulsions developed. He advises therefore not to wait for the convulsions when there is a long phase of these prodromal symptoms, but to deliver the woman at once. His material embraces further eight cases in which convulsions did not come on until after delivery; two of the women died. Also twelve cases of eclampsia without convulsions at any time; with a mortality of one of the mothers and two of the children. Among the prodromal symptoms he mentions edema of the legs and thighs, trunk, back of the hands and in the face. In three of his cases the family had noticed the puffiness of the face 3 or 4 weeks before the convulsions, in ten cases for a week or two and quite commonly for a few days before the convulsions. Frontal headache is one of the most important pro-

dromal symptoms; in forty-nine cases the headache had been noticed for more than 24 hours before the convulsion, in one case for 2 months, in two cases for 1 month and in three for 10 to 18 days. In thirty cases there had been prodromal symptoms on the part of the stomach, nausea and vomiting; in six cases there had been pain in the stomach region for a few days. Visual disturbances are the most instructive of the prodromal symptoms; they were noted in twenty-six of his total cases. The women complained of blurring of print and objects, colored rings surrounded objects or there was actual blindness. These disturbances in vision accompanied the other severer symptoms. In seven cases the visual disturbances had been observed for some time before the convulsions. In four cases total blindness developed from 4 to 12 hours before the convulsions; in three of these cases it had been preceded by blurring for several days. In the other case the blindness came on suddenly, 4 hours before the convulsion, together with intense headache, vomiting and nosebleed. In six of the cases there had been a tendency to vertigo for a few days or weeks. Drowsiness was observed in five cases for a few days or hours before the convulsions; in one case accompanied by involuntary urination. Insomnia and restlessness were observed in two cases for 24 hours before the convulsions and another patient showed marked depression. One patient was semidelirious for 2 hours before the first convulsion and another lay in coma for 2 hours. On the whole, Albeck asserts, the convulsions must be regarded merely as an additional symptom in the clinical picture of eclampsia, following other cerebral symptoms.

Zentralblatt für Chirurgie, Leipsic

October 8, XXXVII, No. 41, pp. 1337-1360

171 The Catgut Question. O. v. Herff.
172 Autoplastic Use of the Sac for Necrosis of the Intestine from Incarceration of a Hernia. (Die sakkuläre Autoplastik bei Darmnekrosen infolge Brucheinklemmung. Ein neues Verfahren.) G. Lerda.

Zentralblatt für Gynäkologie, Leipsic

October 8, XXXIV, No. 41, pp. 1321-1344

173 Question of Immunization against Puerperal Infection. A. Czyzewicz.
174 The Momburg Belt Constriction after Rupture of Tubal Pregnancy. (Momburg'sche Umschnürung bei geborstener Eileiterschwangerschaft.) M. Stolz.
175 Abdominal Cesarean Section with Facial Presentation and Menacing Rupture of the Uterus. (Sectio caesarea abdominalis inferior transperitonealis bei Gesichtslage und drohender Uterusruptur.) E. Gerstenberg.

Zentralblatt für innere Medizin, Leipsic

October 8, XXXI, No. 41, pp. 1017-1040

176 Value of the Cammidge Pancreatic Reaction. L. D'Amato and G. Cuomo.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 29, XXXI, No. 117, pp. 1233-1240

177 Three Cases of Pseudoappendicitis Related to Ptosis of the Liver. R. Mosti.

October 2, No. 118, pp. 1241-1256

178 Latent Tuberculosis and Its Specific Treatment. F. Mottola.
179 Chloroform Anesthesia for Children. (Narcosi chloroformica nei bambini.) V. Brun.

October 4, No. 119, pp. 1257-1264

180 Erosive and Gangrenous Balanitis. P. Romeo.

Policlinico, Rome

October 2, XVII, No. 40, pp. 1251-1282

181 Experimental Research on Pathogenesis of Acquired Diverticula in the Bladder. F. Cuturi.
182 Prophylaxis of Cholera. L. Verney.

Riforma Medica, Naples

October 3, XXV, No. 40, pp. 1093-1120

183 Gastric Disturbances with Hypersecretion. (Gastropatie dinamiche secretorie per eccesso. V.) G. Rummo.
184 Behavior of the Wassermann Reaction Under the Influence of Various Drugs. T. Casoni.
185 Fixation of Complement in Diagnosis of Echinococcus Cyst. L. De Gaetano.

Hygiea, Stockholm

September, LXXII, No. 9, pp. 913-1040

186 Diphtheria and Phlegmonous Sore Throat. T. Hellström.
187 Blowing Out the Pleural Effusion Instead of Aspirating it. (Utblåsning af pleuraexsudat i stället för aspiration.) I. Holmgren.
188 Technic of Artificial Immobilization of the Tuberculous Lung. (Bidrag till tekniken vid kompressionsbehandling af lungtuberkulos.) I. Holmgren.
189 The v. Pirquet Tuberculin Reaction and Prognosis of Pulmonary Tuberculosis. A. Lichtenstein.
190 Ehrlich's "606" in Syphilis. H. Marcus.

Nordiskt medicinskt Arkiv, Stockholm

XLII, Surgical Section, No. 4. Last indexed August 6, p. 546

191 Diagnosis and Treatment of Kidney Stones. (Nephrolithiasis.) B. Floderus. Continued.
192 Uterine Myoma in Relation to Conception, Pregnancy, Delivery and the Puerperium. A. Troell. Continued.

XLIII, Internal Medicine Section, No. 1

193 Influence of Exophthalmic Goiter and Allied Conditions on the Stature and Ossification. I. Holmgren. Continued.

Ugeskrift for Læger, Copenhagen

September 29, LXXII, No. 39, pp. 1163-1188

194 Development of the Theory of Therapia sterilisans Magna. V. Ellermann.

Upsala Läkareförenings Förhandlingar, Upsala

New Series XV, No. 8, pp. 495-600. Last indexed Oct. 1, p. 1240

195 O. Rudbeck (1630-1702). (Aftäckningen af Olof Rudbecks Byst.) E. Clason.
196 Fatigue and Recuperation in the Sartorius Muscle of the Frog. (Några undersökningar öfver uttröttning och restitution hos den öfverlefvande M. Sartorius hos grodan.) F. Berg.
197 Operations for Cancer of the Vagina, Especially the Primary. S. Lindqvist.

Books Received

Books received are acknowledged in this column and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

A MANUAL OF CHEMISTRY. Theoretical and Practical, Inorganic and Organic. Adapted to the Requirements of Students of Medicine. By Arthur P. Luff, M.D., Physician to St. Mary's Hospital, and Hugh C. H. Candy, B.A., Lecturer on Chemistry in the London Hospital Medical College. Cloth. Price, $1.75. Pp. 622, with 46 illustrations. Chicago: Chicago Medical Book Co., 1910.

PRACTICAL POINTS IN NURSING. For Nurses in Private Practice. With Appendix Containing Rules for Feeding the Sick, Recipes for Invalid Foods and Beverages, etc. By Emily A. M. Stoney, Graduate of the Training School for Nurses, Lawrence, Mass. Fourth Edition. Cloth. Price, $1.75 net. Pp. 495, with 97 illustrations. Philadelphia: W. B. Saunders Co., 1910.

DIE EXPERIMENTELLE CHEMOTHERAPIE DER SPIRILLOSEN (SYPHILIS, RÜCKFALLFIEBER HUHNERSPIRILLOSE FRAMBÖSIE). Von Paul Ehrlich und S. Hata. Mit Beiträgen von H. J. Nichols, New York; J. Iversen, St. Petersburg; Bitter, Kairo, und Dreyer, Kairo. Paper. Price, 6 marks. Pp. 164, with 50 illustrations. Berlin: Julius Springer, 1910.

INSECTS AND DISEASE. A Popular Account of the Way in Which Insects May Spread or Cause Some of Our Common Diseases. By Rennie W. Doane, A.B., Assistant Professor of Entomology, Leland Stanford Junior University. Cloth. Price, $1.50 net. Pp. 221, with 112 illustrations. New York: Henry Holt & Co., 1910.

CHILDREN'S DIET IN HOME AND SCHOOL. With Classified Recipes and Menus. A Reference Book for Parents, Nurses, Teachers, Women's Clubs and Physicians. By Louise E. Hogan, Editor of "The Children's Library." Cloth. Price, 75 cents net. Pp. 128. New York: Doubleday, Page & Co., 1910.

GRAEFE-SAEMISCH HANDBUCH DER GESAMTEN AUGENHEILKUNDE. By Various Authors. Second Edition. Vol. IX, Part II. Instalment 196 to 197. Basedow'sche Krankheit von H. Sattler, Professor in Leipzig. Paper. Price, 4 marks. Pp. 513 to 667. Leipzig: Wilhelm Engelmann, 1910.

ELÉMENTS D'ANATOMIE PATHOLOGIQUE. Par le Dr. L. Bériel, Chef des travaux d'anatomie pathologique à la Faculté de Lyon, Médecin des hôpitaux. Cloth. Price, 10 francs. Pp. 563, with 232 illustrations. Paris: G. Steinheil, 2 rue Casimir-Delavigne, 1910.

EINFÜHRUNG IN DIE MODERNE KINDERHEILKUNDE. Ein Lehrbuch für Studierende und Aerzte. Von Dr. B. Salge, Professor der Kinderheilkunde in Freiburg i. B. Second Edition. Cloth. Price, 9 marks. Pp. 384, with 15 illustrations. Berlin: Julius Springer, 1910.

PSYCHE. A Concise and Easily Comprehensible Treatise on the Elements of Psychiatry and Psychology. For Students of Medicine and Law. By Dr. Max Talmey. Cloth. Price, $2.50. Pp. 282. New York: Medico-Legal Publishing Company, 1910.

OSTEOLOGY AND SYNDESMOLOGY. By Howard A. Sutton, M.D., Assistant in the Department of Anatomy of the University of Pennsylvania, and Cecil K. Drinker, B.S. Cloth. Price, $1.50 net. Pp. 225. Philadelphia: P. Blakiston's Son & Co., 1910.

HERNIA. Its Cause and Treatment. By R. W. Murray, F.R.C.S., Surgeon, David Lewis Northern Hospital. Second Edition. Cloth. Price, $1.75 net. Pp. 184, with 62 illustrations. Philadelphia: P. Blakiston's Son & Co., 1910.

TRANSACTIONS OF THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA (THE STATE BOARD OF HEALTH). Organized 1847. Meeting of 1910 (J. Norment Baker, Secretary, Montgomery), Mobile, April 19-22. Cloth. Pp. 754.

CONFIDENCES. Talks With a Young Girl Concerning Herself. By Edith B. Lowry, M.D. Cloth. Price, 50 cents. Pp. 94. Chicago: Forbes & Co., 1910.